MIAMIBEACH

City of Miami Beach, 1755 Meridian Avenue, 3rd Floor, Miami Beach, Florida 33139, www.miamibeachfl.gov
PROCUREMENT DEPARTMENT
Tel: 305-673-7490 Fax: 786-394-4002

ADDENDUM NO. 5
PROPOSAL REQUIREMENTS DOCUMENT (PRD) 2016-071-KB
Notice of Receipt of Unsolicited Proposal and
Request for Alternative Proposals for
Light Rail/Modern Streetcar Project in Miami Beach
March 17, 2016

1. The purpose of this Addendum 5 to the above-referenced PRD is to supersede all prior versions of the PRD, as well as any addenda issued to prior PRD versions, with the attached Amended and Restated PRD 2016-071-KB, dated March 17, 2016.

   Interested parties shall rely solely on the Amended and Restated PRD 2016-071-KB. No information, other than as stated in the Amended and Restated PRD 2016-071-KB, shall be binding on the City.

Any questions regarding this Addendum should be submitted **in writing** to the Procurement Department to the attention of the individual named below, with a copy to the City Clerk's Office at RafaelGranado@miamibeachfl.gov.

Procurement Contact:	Telephone:	Email:
Kristy Bada	305-673-7000, ext. 6218	KristyBada@miamibeachfl.gov

Proposers are reminded to acknowledge receipt of this addendum as part of your PRD submission.
Sincerely,

Alex Denis
Procurement Director

MIAMIBEACH

AMENDED AND RESTATED PROPOSAL REQUIREMENTS DOCUMENT (PRD)

PRD 2016-071-KB

Notice of Receipt of Unsolicited Proposal and Request for Alternative Proposals for Light Rail/Modern Streetcar Project in Miami Beach

Original PRD Issuance Date: January 12, 2016.
Amended and Restated PRD: March 17, 2016
Proposals Due: May 10, 2016 @ 3:00 p.m.

Issued By:
CITY OF MIAMI BEACH
Procurement Department
Attention: Kristy Bada, Contracting Officer
1700 Convention Center Drive, Miami Beach, FL 33139
305.673.7490 | KristyBada@MiamiBeachFL.gov | www.miamibeachfl.gov

PUBLIC NOTICE

Proposal Requirements Document (PRD) 2016-071-KB

Notice of Receipt of Unsolicited Proposal for Light Rail/Modern Streetcar Project in Miami Beach

NOTICE IS HEREBY GIVEN that the City of Miami Beach, Florida, a municipal corporation of the State of Florida, has received an unsolicited proposal for a qualifying public-private partnership project in accordance with Florida Statute 287.05712 for an off-wire or "wireless" light rail/modern streetcar system (the "Project"). The City requests, and in accordance with Florida Statute 287.05712, will accept alternative proposals for the Project until 3:00 p.m. on May 10, 2016.

Persons or entities wishing to submit alternative proposals for the Project ("Proposers") may do so by delivering sealed proposals to: City of Miami Beach, Procurement Department, Attn: Alex Denis, 1755 Meridian Avenue, 3rd Floor, Miami Beach, Florida 33139. Each sealed proposal submitted should be clearly marked on the outside: "Sealed Proposal - Light Rail/Modern Streetcar System and Related Services."

All proposals must be timely submitted no later than 3:00 p.m. on May 10, 2016, and must contain the information and materials required under Fla. Stat. 287.05712(5), the additional proposal submission requirements required by the City as provided below, and a $100,000 application fee payable to the City of Miami Beach, Florida. Any proposal received after 3:00 p.m. on May 10, 2016 will be returned unopened, and will not be considered. Responsibility for submitting timely proposals rests solely with Proposers; City will not be responsible for any delays caused by mail, courier service or other occurrence.

Proposals will be ranked in order of preference by the City. In ranking the proposals, the City will consider factors in accordance with Florida Statute 287.05712 that include, but are not limited to, professional qualifications, general business terms, innovative design techniques or cost-reduction terms, and finance plans. A more complete listing of factors that the City will consider in ranking proposals, associated Project and proposal submission requirements ("Proposal Requirements") can be obtained through the City's proposal notification system, PublicPurchase (www.PublicPurchase.com). Interested parties must register with PublicPurchase for access to the Proposal Requirements. Registration will allow Proposers to receive any additional information that may be issued with respect to this procurement.

The City reserves the right to reject any or all proposals, or as provided under Section 287.05712, Florida Statutes, to award and negotiate an interim agreement and/or comprehensive agreement with the firm whose proposal best serves the interests of the City. Nothing contained herein shall be interpreted as an obligation or binding agreement by the City regarding the Project.

The City's Cone of Silence shall be in effect during the procurement process in accordance with Section 2-486 of the City Code. A link to certain applicable City of Miami Beach procurement-related provisions is available at www.miamibeachfl.gov/procurement. All communications regarding the Project and/or Proposal Requirements shall be directed in writing to: City of Miami Beach Procurement Department, Attn: Kristy Bada, email: kristybada@miamibeachfl.gov, with a copy to the City Clerk, Rafael Granado, at rafaelgranado@miamibeachfl.gov. The City will provide notice of a decision or proposed decision regarding contract award. Any person who is, or claims to be, adversely affected by the City's decision or proposed decision shall file a written protest in accordance with Section 2-371 of the City Code.

All proposals received in response to this Notice will become the property of the City of Miami Beach and will not be returned. Such proposals and related information shall be subject to applicable provisions of the Florida Public Records Law.

SECTION 0200 INSTRUCTIONS TO RESPONDENTS & GENERAL CONDITIONS

1. GENERAL. This Proposal Requirements Document (PRD) is issued by the City of Miami Beach, Florida (the "City"), pursuant to Section 287.05712(4), Florida Statutes, notifying interested parties that it has received an unsolicited proposal for the development of an off-wire or "wireless" light rail/modern streetcar system in Miami Beach as a public-private partnership (the "Project"). The City of Miami Beach will accept other Proposals from qualified firms to deliver the Project and design, build, finance, operate and maintain the Project in accordance with the specifications set forth in this PRD ("Proposals"). The City, at its sole discretion, will also consider alternative proposals that may include, as part of the Project, additional routes along Alton Road, 17th Street, Dade Boulevard, Meridian Avenue, or Convention Center Drive.

The City utilizes ***PublicPurchase*** (www.publicpurchase.com) for automatic notification of competitive solicitation opportunities and document fulfillment, including the issuance of any addendum to this PRD. Any prospective Proposer who has received this PRD by any means other than through ***PublicPurchase*** must register immediately with ***PublicPurchase*** to assure it receives any addendum issued to this PRD. **Failure to receive an addendum and to comply with the requirements of this PRD, including, without limitation, payment of the requisite $100,000 application fee, shall result in disqualification of a Proposal.**

2. BACKGROUND. As early as 1969, a rail connection between the City of Miami and the City of Miami Beach was identified as a priority in Miami-Dade County's Long Range Transportation Plan. Over 10 years ago, the Miami-Dade Metropolitan Planning Organization (MPO) prepared the Draft Environmental Impact Statement (DEIS) for a light rail transit/modern streetcar system to connect the cities of Miami Beach and Miami via dedicated right-of-way along the MacArthur Causeway (the Baylink Project). More recently, the MPO conducted a planning-level study that refreshed and updated the decade-old Baylink study in June 2015 and reaffirmed the MacArthur Causeway as the preferred alignment to connect Miami Beach and Miami and recommended an off-wire or "wireless" light rail transit/modern streetcar system for the portion within each urban area as the preferred vehicle technology as well as the use of exclusive lanes for the transit vehicles. Phase 1 of the recommended route alignment is from downtown via MacArthur Causeway, 5th Street, and Washington Avenue directly to the Miami Beach Convention Center referred to as the Direct Connect Project. The portion of the Direct Connect Project located within Miami Beach and consisting of a 2-way connection on 5th Street and Washington Avenue, is referred to as the "South Beach Component." This PRD, and the request for other Proposals for the Project, relates solely to the South Beach Component of the Direct Connect Project. For additional background on the local and regional efforts with respect to the Direct Connect Project, see City Commission Resolution No. 2015-29247.

The City has engaged Kimley-Horn for preparation of an environmental analysis for the South Beach Component of the Direct Connect Project, to be completed in parallel with this solicitation. Kimley-Horn estimates that the environmental review for the South Beach Component can be accomplished in 10 to 12 months. As of the date of issuance of this PRD, the City's planning efforts for the Project are intended to preserve eligibility for state funding. At this time, the City does not anticipate that it will pursue any federal funding or financing for the Project. Based on the above schedule, it is intended that this solicitation and the pre-development period following execution of an interim agreement will overlap the environmental review and analysis for the Project.

3. SCOPE. The scope of the Project contemplates a full "turn-key" delivery approach that consists of and includes the design, construction, financing, operation, and maintenance of the Project, including vehicles and associated power, communications, signalization, and other systems required for the functionality of the Project ("Vehicle/Systems Technology"); operation and maintenance facilities, related civil infrastructure, including "curb-to-curb" road reconstruction, permitting, and related services pertaining to the Project, including all surveys, relocation of all utilities, replacement of pipes more than 50 years old and other related infrastructure work, unless otherwise specified by the City. The City will make a site available for a maintenance facility, with such site to be managed/operated by the successful Proposer as part of the Project. The City's initial assessment of potential sites for the maintenance facility is attached as Appendix B hereto.

Further, the City, as part of its resiliency program for sea level rise, intends to raise the level of many streets, install pumps, etc. As part of the Project, the successful Proposer shall be responsible for all resiliency-related work at specified geographical areas impacted by the alignment, with such areas to be determined by the City during the interim agreement negotiations. The resiliency-related scope of work shall be funded separately by the City. The City's current resiliency standards are set forth in Appendix C hereto.

The City anticipates a performance-based availability payment structure over the operating period. The City will consider negotiating with the successful Proposer an option for milestone payments during the construction phase of the Project, if funds are available and appropriated for such purposes.

The lead team participants include the following firms: (i) the firm that will be responsible for the construction of the Project and is licensed as a general contractor in Florida ("Lead Contractor"), (ii) the firm responsible for operation of the proposed vehicle/streetcar system ("Lead Operator"), (iii) the firm primarily responsible for coordinating the development and completion of all Project-related engineering ("Lead Engineer"), (iv) the firm responsible for maintenance of the Project, including the proposed streetcar system ("Lead Maintenance Entity"), (v) the entity primarily responsible for providing equity for the Project ("Lead Investor"), and (vi) the streetcar vehicle or systems technology suppliers ("Vehicle/Systems Suppliers") (entities (i) through (vi) above collectively referred to as "Lead Team Participants").

Proposer teams may identify more than one (1) proposed Vehicle/System Supplier as part of their proposals, provided that each Vehicle/System Supplier must meet the Minimum Requirements, with the final Vehicle/System Supplier to be identified during the interim agreement negotiations. The Vehicle/Systems Suppliers may participate on more than one (1) Proposer team. Except as to the Vehicle/System Suppliers, all other Lead Team Participants shall not participate on more than one (1) Proposer team.

During the interim agreement negotiations, City will provide additional reference information, including a Level 1 contamination screening evaluation, projected ridership estimates, loading and related information, transit service and operating plan information, and City's draft funding plan.

The City Commission intends to pursue a State level environmental clearance and will provide a draft funding plan as part of the Interim Agreement. Proposers need to be knowledgeable of applicable local City, County and State requirements, and have the ability to meet and comply with those requirements. For purposes of the Proposals, Proposers must assume that the Project will be State and local-funded and that the Project shall incorporate all applicable requirements.

Following the ranking of proposals by the City Commission, the City intends to negotiate and enter into an interim agreement with the successful Proposer, with the intent of commencing development activities and establishing the process and timeline for negotiation of a comprehensive agreement. The City shall have no obligation to enter into an interim or comprehensive agreement. Any comprehensive agreement entered into with a successful Proposer shall be subject to and contingent upon environmental clearance/approval

of Project components by applicable governmental entities.

4. MINIMUM ELIGIBILITY REQUIREMENTS. The minimum requirements for the Project and this PRD ("Minimum Requirements") are listed below. Proposer shall submit documentation of compliance with each Minimum Requirement. Any Proposer that fails to include the required submittals with its Proposal, or fails to comply with the Minimum Requirements, shall be deemed non-responsive and shall not have its Proposal considered.

A. Project and Proposer Minimum Requirements.

1. The Proposer's Vehicle/Systems Technology shall have demonstrated capacity of fully catenaryless for revenue operations in Miami Beach while in operation between stops along the Project route, following an alignment on a dedicated right of way. For purposes of satisfying the Minimum Requirements, the Vehicle/System Technology may use catenary within the maintenance facility depot, and may allow for charging of the vehicle batteries or supercapacitors at passenger stops along the route.
2. The Proposer's Vehicle/Systems Technology shall have demonstrated full performance capabilities, including maintaining air conditioning in all vehicles in a climate similar to the climate in the City of Miami Beach.
3. For purposes of the Minimum Requirements, demonstrated capacity may be satisfied if the proposed Vehicle/Systems Technology is in revenue operation as part of any portion or segment of track within any project anywhere in the world.
4. The Proposer's Vehicle/Systems Technology must include low floor, low step design throughout each vehicle to maximize and facilitate accessibility and more timely passenger loading and unloading.
5. The Proposer's Vehicle/Systems Technology shall be able to operate in a typical centenary system in the United States (750V DC).
6. The Proposer's Vehicle/SystemsTechnology shall have demonstrated capacity to address minimum ridership of 20,075 people on a daily basis, should it be extended across the MacArthur Causeway as part of the Direct Connect Project.
7. The Proposer's Lead Contractor shall demonstrate a bonding capacity of not less than $300 million by submitting a letter stating its bonding capacity from an A-rated, Financial Class V, Surety Company. The statement of bonding capacity shall be directly from the Surety firm on its official letterhead and signed by an authorized agent of the firm.
8. The Proposer's Lead Contractor must have successfully delivered, as a general contractor under a design/build or other form of construction contract, at least (1) public or public/private infrastructure project with minimum hard construction costs of $250 million in the last five (5) years.
9. The Lead Investor must have successfully delivered financing for a project under a public-private partnership (P3) approach within the last five years by Lead Investor for a P3 project of at least $400 million.

For purposes of the Minimum Requirements, "Buy America" provisions of the U.S. Department of Transportation, set forth in 49 C.F.R. 661 and other provisions of federal law, shall not apply to the Project.

B. Application Fee. Proposals must be accompanied by a Proposal application fee in the amount of $100,000, payable to the City of Miami Beach, payable by wire transfer, prior to the due date for proposals, pursuant to the wire instructions below, as follows:

Bank: SunTrust
ABA: 061000104
SWIFT #: SNTRUS3A (foreign wires)
Account #: 0360002236568
Account Name: City of Miami Beach General Depository Account

The wire transfer receipt number must be included in the Proposal submitted. Failure to submit the application fee in accordance with this provision shall render a Proposal non-responsive and City shall disqualify Proposer from any further consideration.

Except as provided herein, if the application fees collected ultimately exceed the City's costs for fully evaluating proposals, including the City's consultant and legal fees, the City will refund to Proposers the difference between the application fee and the per proposal review cost, on a pro rata basis, within 90 days following the City Commission's ranking of proposals. City shall retain the application fees for the top three (3) ranked proposers until an Interim Agreement is executed, with refunds of any pro rata remaining amounts to be made within ninety (90) days of the City Commission's approval of an interim agreement.

5. SOLICITATION TIMETABLE

Revision of the Project solicitation approach and timetable

The Addendum includes the revised timetable as follows:

Proposal submittals:	May 10, 2016
Evaluation Committee	June, 2016
City Commission Ranking of Proposals:	July, 2016
City Commission Approval of Negotiated Interim Agreement:	September, 2016
Project Development and Price Negotiation:	TBD
Commercial Close of Comprehensive Agreement:	TBD
Financial Close:	TBD*

*The financial close assumes the environmental approvals have been achieved at or before this time.

6. PROPOSAL DUE DATE. Proposals are to be received on or before 3:00 p.m. on May 10, 2016. Any Proposal received after the deadline established for receipt of Proposals will be considered late and not be accepted or will be returned to Proposer unopened. The City does not accept responsibility for any delays caused by mail, courier service or other occurrence.

7. PROCUREMENT CONTACT. Any questions or clarifications concerning this solicitation shall be submitted to the Procurement Contact noted below:

Procurement Contact:	Telephone:	Email:
Kristy Bada	**305-673-7490**	**KristyBada@MiamiBeachFL.gov**

Additionally, the City Clerk is to be copied on all communications via e-mail at: RafaelGranado@miamibeachfl.gov; or via facsimile: 786-394-4188.

The PRD title/number shall be referenced on all correspondence. All questions or requests for clarification must be received no later than thirty (30) calendar days prior to the date Proposals are due. All responses to questions/clarifications will be sent to all prospective Proposers in the form of an addendum.

8. DETERMINATION OF AWARD. Proposals will be ranked in order of preference by the City. In ranking the proposals, the City will consider factors in accordance with Florida Statute 287.05712, as further outlined in (1) to (5) below, and any other considerations identified in this PRD. The final ranking results outlined in Section 0400, Evaluation of Proposals, will be considered by the City Manager who may recommend to the City Commission the Proposer(s) s/he deems to be in the best interest of the City, or may recommend rejection of all Proposals. The City

Manager's recommendation need not be consistent with the ranking identified herein and takes into consideration Miami Beach City Code Section 2-369, including the following considerations:

(1) The ability, capacity and skill of the Proposer to perform the contract.

(2) Whether the Proposer can perform the contract within the time specified, without delay or interference.

(3) The character, integrity, reputation, judgment, experience and efficiency of the Proposer.

(4) The quality of performance of previous contracts.

(5) The previous and existing compliance by the Proposer with laws and ordinances relating to the contract.

The City Commission shall consider the City Manager's recommendation and may approve such recommendation. The City Commission may also, at its option, reject the City Manager's recommendation and select another Proposal or Proposals which it deems to be in the best interest of the City, or it may also reject all Proposals. Upon approval of selection by the City Commission, negotiations between the City and the selected Proposer(s) will take place to arrive at a mutually acceptable interim agreement for the Project or any portion thereof, in accordance with Florida Statute 287.05712. If the City and selected Proposer cannot agree on contractual terms, the City will terminate negotiations and may begin negotiations with the next ranked Proposer, continuing this process with each Proposer in rank order until agreeable terms can be met or this solicitation process is terminated, unless otherwise specified by the City Commission. Contract negotiations for an interim agreement will take place within the sixty (60) day period following the City Commission's ranking of proposals, and the City Commission's consideration of the final interim agreement will take place as quickly as possible thereafter. Following execution of the interim agreement, if the City and the selected Proposer cannot agree on contractual terms for a comprehensive agreement, the City will terminate negotiations and may begin negotiations for an interim agreement with the next ranked Proposer, continuing this process with each Proposer in rank order until agreeable terms can be met or this solicitation process is terminated, unless otherwise specified by the City Commission.

9. NEGOTIATIONS. The City reserves the right to enter into further negotiations with the selected Proposer for an interim agreement agreement for delivery of the Project or any portion thereof, and which agreement shall, at a minimum, comply with Florida Statute 287.05712 and the Minimum Requirements set forth herein. Notwithstanding the preceding, the City is in no way obligated to enter into an interim agreement or, ultimately, a comprehensive agreement with the selected Proposer, in the event the parties are unable to negotiate a mutually acceptable agreement. It is also understood and acknowledged by Proposers that no property, contract or binding rights of any kind shall be created at any time until and unless a final comprehensive agreement has been fully negotiated, approved by the City Commission, and executed by the parties. Any comprehensive agreement ultimately entered into with a successful Proposer shall be subject to and contingent upon environmental clearance/approval of Project components by applicable governmental entities.

10. PRE-PROPOSAL INTERPRETATIONS. Oral information or responses to questions received by prospective Proposers are not binding on the City and will be without legal effect, including any information received at pre-submittal meeting or site visit(s). The City by means of Addenda will issue interpretations or written addenda clarifications considered necessary by the City in response to questions. Only questions answered by written addenda will be binding and may supersede terms noted in this solicitation. Addendum will be released through *PublicPurchase*. Any prospective Proposer who has received this PRD by any means other than through PublicPurchace must register immediately with PublicPurchase to assure it receives any addendum issued to this PRD. Failure to receive an addendum may result in disqualification of Proposal. Written questions should be received no later than April 9, 2016. This Amended and Restated PRD supersedes the original PRD issued on January 12, 2016, and all prior addenda thereto. All provisions in the January 12, 2016 PRD and Addendums 1 through 4 not incorporated in this PRD, as amended and restated, shall have no force and effect and shall not be binding on the City or proposers.

11. CONE OF SILENCE. In Resolution No. 2015-29247, the City Commission elected, at its discretion, to apply the City's Cone of Silence to this solicitation. Except as may be otherwise specified by the City Commission, this PRD is subject to the Cone of Silence requirements as set forth in Section 2-486 of the City Code. All Proposers are expected to be or become familiar with the above requirements. Proposers shall be solely responsible for ensuring that all applicable provisions of the City's Cone of Silence are complied with, and shall be subject to any and all sanctions, as prescribed therein, including rendering their Proposal response voidable, in the event of such non-compliance. Communications regarding this PRD solicitation are to be submitted in writing to the Procurement Contact named herein with a copy to the City Clerk at rafaelgranado@miamibeachfl.gov.

The City Commission, in Resolution 2016-29304, authorized a process for one-on-one meetings with Proposers for fact-finding purposes. The City will not schedule any further one-on-one meetings, and all questions should be in writing, in accordance with this Section.

12. PUBLIC ENTITY CRIME. A person or affiliate who has been placed on the convicted vendor list following a conviction for public entity crimes may not submit a Proposal on a contract to provide any goods or services to a public entity, may not submit a Proposal on a contract with a public entity for the construction or repair of a public building or public work, may not submit Proposals on leases of real property to public entity, may not be awarded or perform work as a contractor, supplier, sub-contractor, or consultant under a contract with a public entity, and may not transact business with any public entity in excess of the threshold amount provided in Sec. 287.017, for CATEGORY TWO for a period of 36 months from the date of being placed on the convicted vendor list.

13. COMPLIANCE WITH THE CITY'S LOBBYIST LAWS. This PRD is subject to, and all Proposers are expected to be or become familiar with, all City lobbyist laws. Proposers shall be solely responsible for ensuring that all City lobbyist laws are complied with, and shall be subject to any and all sanctions, as prescribed therein, including, without limitation, disqualification of their responses, in the event of such non-compliance.

14. DEBARMENT ORDINANCE: This PRD is subject to, and all Proposers are expected to be or become familiar with, the City's Debarment Ordinance as codified in Sections 2-397 through 2-406 of the City Code.

15. CAMPAIGN FINANCE REFORM LAWS. This PRD is subject to, and all Proposers are expected to be or become familiar with, the City's Campaign Finance Reform laws, as codified in Sections 2-487 through 2-490 of the City Code. Proposers shall be solely responsible for ensuring that all applicable provisions of the City's Campaign Finance Reform laws are complied with, and shall be subject to any and all sanctions, as prescribed therein, including disqualification of their responses, in the event of such non-compliance.

16. CODE OF BUSINESS ETHICS. Pursuant to City Resolution No.2000-23879, the Proposer shall adopt a Code of Business Ethics ("Code") and submit that Code to the Procurement Division with its response or within five (5) days upon receipt of request. The Code shall, at a minimum, require the Proposer, to comply with all applicable governmental rules and regulations including, among others, the conflict of interest, lobbying and ethics provision of the City of Miami Beach and Miami Dade County.

17. POSTPONEMENT OF DUE DATE FOR RECEIPT OF PROPOSALS. The City reserves the right to postpone the deadline for submittal of Proposals and will make a reasonable effort to give at least three (3) calendar days written notice of any such postponement to all prospective Proposers through *PublicPurchase*.

18. PROTESTS. Proposers that are not selected may protest any recommendation for selection of award in accordance with the proceedings established pursuant to the City's bid protest procedures, as codified in Sections 2-370 and 2-371 of the City Code (the City's Bid Protest Ordinance). A protest not timely made pursuant to the requirements of the City's Bid Protest Ordinance shall be barred.

19. POSTPONEMENT/CANCELLATION/ACCEPTANCE/REJECTION. The City may, at its sole and absolute discretion, reject any and all, or parts of any and all, Proposals; re-advertise this PRD; postpone or cancel, at any time, this PRD process; or waive any irregularities in this PRD, or in any Proposal responses received as a result of this PRD, in accordance with Florida law.

20. PROPOSER'S RESPONSIBILITY. Before submitting a response, each Proposer shall be solely responsible for making any and all investigations, evaluations, and examinations, as it deems necessary, to ascertain all conditions and requirements affecting the full performance of the contract. Ignorance of such conditions and requirements, and/or failure to make such evaluations, investigations, and examinations, will not relieve the Proposer from any obligation to comply with every detail and with all provisions and requirements of the contract, and will not be accepted as a basis for any subsequent claim whatsoever for any monetary consideration on the part of the Proposer.

21. COSTS INCURRED BY PROPOSERS. All expenses involved with the preparation and submission of Proposals and negotiation of interim agreement, or any work performed in connection therewith, shall be the sole responsibility (and shall be at the sole cost and expense) of the Proposer, and shall not be reimbursed by the City.

22. RELATIONSHIP TO THE CITY. It is the intent of the City, and Proposers hereby acknowledge and agree, that the successful Proposer is considered to be an independent contractor, and that neither the Proposer, nor the Proposer's employees, agents, and/or contractors, shall, under any circumstances, be considered employees or agents of the City.

23. MISTAKES. Proposers are expected to examine the terms, conditions, specifications, delivery schedules, proposed pricing, and all instructions pertaining to the goods and services relative to this PRD. Failure to do so will be at the Proposer's risk and may result in the Proposal being non-responsive.

24. DEFAULT: Failure or refusal of the selected Proposer to execute a contract following approval of such contract by the City Commission, or untimely withdrawal of a response before such award is made and approved, may result in a claim for damages by the City and may be grounds for removing the Proposer from the City's vendor list.

25. MANNER OF PERFORMANCE. Proposer agrees to perform its duties and obligations in a professional manner and in accordance with all applicable Local, State, County, and Federal laws, rules, regulations and codes. Lack of knowledge or ignorance by the Proposer with/of applicable laws will in no way be a cause for relief from responsibility. Proposer agrees that the services provided shall be provided by employees that are educated, trained, experienced, certified, and licensed in all areas encompassed within their designated duties. Proposer agrees to furnish to the City any and all documentation, certification, authorization, license, permit, or registration currently required by applicable laws, rules, and regulations. Proposer further certifies that it and its employees will keep all licenses, permits, registrations, authorizations, or certifications required by applicable laws or regulations in full force and effect during the term of this contract. Failure of Proposer to comply with this paragraph shall constitute a material breach of this contract.

26. SPECIAL CONDITIONS. Any and all Special Conditions that may vary from these General Terms and Conditions shall have precedence.

27. NON-DISCRIMINATION. The Proposer certifies that it is in compliance with the non-discrimination clause contained in Section 202, Executive Order 11246, as amended by Executive Order 11375, relative to equal employment opportunity for all persons without regard to race, color, religion, sex or national origin. In accordance with the City's Human Rights Ordinance, codified in Chapter 62 of the City Code, Proposer shall prohibit (and cause hotel operator to prohibit) discrimination by reason of race, color, national origin, religion, sex, intersexuality, gender

identity, sexual orientation, marital and familial status, and age or disability in the sale, lease, use or occupancy of the Hotel Project or any portion thereof.

28. DEMONSTRATION OF COMPETENCY. The City may consider any evidence available regarding the financial, technical, and other qualifications and abilities of a Proposer, including past performance (experience) in making an award that is in the best interest of the City, including:

A. Pre-award inspection of the Proposer's facility may be made prior to the award of contract.

B. Proposals will only be considered from firms which are regularly engaged in the business of providing the goods and/or services as described in this solicitation.

C. Proposers must be able to demonstrate a good record of performance for a reasonable period of time, and have sufficient financial capacity, equipment, and organization to ensure that they can satisfactorily perform the services if awarded a contract under the terms and conditions of this solicitation.

D. The terms "equipment and organization", as used herein shall, be construed to mean a fully equipped and well established company in line with the best business practices in the industry, and as determined by the City of Miami Beach.

E. The City may consider any evidence available regarding the financial, technical, and other qualifications and abilities of a Proposer, including past performance (experience), in making an award that is in the best interest of the City.

F. The City may require Proposers to show proof that they have been designated as authorized representatives of a manufacturer or supplier, which is the actual source of supply. In these instances, the City may also require material information from the source of supply regarding the quality, packaging, and characteristics of the products to be supply to the City.

29. ASSIGNMENT. The successful Proposer shall not assign, transfer, convey, sublet or otherwise dispose of the contract, including any or all of its right, title or interest therein, or his/her or its power to execute such contract, to any person, company or corporation, without the prior written consent of the City.

30. LAWS, PERMITS AND REGULATIONS. The Proposer shall obtain and pay for all licenses, permits, and inspection fees required to complete the work and shall comply with all applicable laws.

31. FLORIDA PUBLIC RECORDS LAW. Proposers are hereby notified that all Proposal including, without limitation, any and all information and documentation submitted therewith, are exempt from public records requirements under Section 119.07(1), Florida Statutes, and s. 24(a), Art. 1 of the State Constitution until such time as the City provides notice of an intended decision or until thirty (30) days after opening of the Proposals, whichever is earlier. Additionally, the successful Proposer agrees to be in full compliance with Florida Statute 119.0701 including, but not limited to, agreement to (a) keep and maintain public records that ordinarily and necessarily would be required by the public agency in order to perform the services; (b) provide the public with access to public records on the same terms and conditions that the public agency would provide the records and at a cost that does not exceed the cost provided in this chapter or as otherwise provided by law; (c) ensure that public records that are exempt or confidential and exempt from public records disclosure requirements are not disclosed except as authorized by law; (d) meet all requirements for retaining public records and transfer, at no cost, to the City all public records in its possession upon termination of the interim agreement or comprehensive agreement and destroy any duplicate public records that are exempt or confidential and exempt from public records disclosure requirements. All records stored electronically must be provided to the City in a format that is compatible with the information technology systems of the City.

32. CONFLICT OF INTEREST. All Proposers must disclose, in their Proposal, the name(s) of any officer, director, agent, or immediate family member (spouse, parent, sibling, and child) who is also an employee of the City of Miami Beach. Further, all Proposers must disclose the name of any City employee who owns, either directly or indirectly, an interest of ten (10%) percent or more in the Proposer entity or any of its affiliates.

33. MODIFICATION/WITHDRAWALS OF PROPOSALS. A Proposer may submit a modified Proposal to replace all or any portion of a previously submitted Proposal up until the Proposal due date and time. Modifications received after the Proposal due date and time will not be considered. Letters of withdrawal received after the Proposal due date and before said expiration date, and letters of withdrawal received after contract award will not be considered.

Proposer and Lead Team Participants, through the certification set forth in Appendix A hereto, shall commit to serving as part of a Proposer team for a period of [360] calendar days from the Commission's ranking of proposals. If the City is unable to successfully negotiate an interim agreement (or subsequently, a comprehensive agreement), with the successful Proposer, the purpose of this certification is to permit negotiations for an interim agreement with the next-ranked Proposer

34. EXCEPTIONS TO PRD. Proposers must clearly indicate any exceptions they wish to take to any of the terms in this PRD, and outline what, if any, alternative is being offered. All exceptions and alternatives shall be included and clearly delineated, in writing, in the Proposal. The City, at its sole and absolute discretion, may accept or reject any or all exceptions and alternatives. In cases in which exceptions and alternatives are rejected, the City shall require the Proposer to comply with the particular term and/or condition of the PRD to which Proposer took exception to (as said term and/or condition was originally set forth on the PRD).

35. ACCEPTANCE OF GIFTS, FAVORS, SERVICES. Proposers shall not offer any gratuities, favors, or anything of monetary value to any official, employee, or agent of the City, for the purpose of influencing consideration of this Proposal. Pursuant to Sec. 2-449 of the City Code, no officer or employee of the City shall accept any gift, favor or service that might reasonably tend improperly to influence him in the discharge of his official duties.

36. SUPPLEMENTAL INFORMATION. City reserves the right to request supplemental information from Proposers at any time during the PRD solicitation process, unless otherwise noted herein.

37. NO WARRANTIES OR REPRESENTATIONS BY CITY. Any information provided by City under this PRD is solely to provide background information for the convenience of the Proposers. City makes no representations or warranties, express or implied, of any kind whatsoever with respect to any of the matters identified in this PRD.

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SECTION 0300 PROPOSAL SUBMITTAL INSTRUCTIONS AND FORMAT

1. PROPOSAL EVALUATION. The City Manager shall appoint an Evaluation Committee to evaluate the information submitted by Proposers in response to this PRD, and the qualifications of the Proposer and the Lead Team Participants. The City reserves the right to engage the advice of its consultant or other technical experts in assisting the Evaluation Committee in the review of Proposals received. Following the Evaluation Committee's ranking of proposers, the determination of award shall be made in accordance with Paragraph 8 of Section 0200 of the PRD.

2. SEALED RESPONSES. Proposers shall submit one (1) original Proposal (preferably in 3-ring binder) in an opaque, sealed envelope or container on or before the due date established for the receipt of Proposals, ten (10) bound copies and one (1) electronic format (CD or USB format) to be submitted. The following information should be clearly marked on the face of the envelope or container in which the Proposal is submitted: solicitation number, solicitation title, Proposer name, Proposer return address. Proposals received electronically, either through email or facsimile, are not acceptable and will be rejected.

3. PROPOSAL FORMAT. In order to maintain comparability, facilitate the review process and assist the Evaluation Committee in review of Proposals, it is strongly recommended that Proposals be organized and tabbed in accordance with the sections and manner specified below. Hard copy submittal should be tabbed as enumerated below and contain a table of contents with page references. Electronic copies should also be tabbed and contain a table of contents with page references. Proposals that do not include the required information will be deemed non-responsive and will not be considered.

4. PROPOSAL FORMAT REQUIREMENTS. In order to maintain comparability, facilitate the review process, and assist the Evaluation Committee in review of responses, it is recommended that responses be organized and tabbed in accordance with the sections and manner specified below. Hard copy submittals should be bound and tabbed as enumerated below and contain a table of contents with page references. Electronic copies should also be tabbed and contain a table of contents with page references. Proposers should prepare their submittal on 8.5 x 11 paper. Please feel free to include other materials, such as covers, appendices, brochures, etc. at your discretion. The recommended number of pages the City desires for each submittal item is indicated below. These are recommendations only and actual pages may exceed the recommendation. The City reserves the right to require additional information to determine financial capability. Proposer shall have ten (10) calendar days respond to such a request.

TAB 1	Executive Summary, Forms & Compliance with Minimum Requirements (4 page limit)

1. **Cover Page, Letter, and Table of Contents.** The cover letter must indicate Prime Proposer and be signed by same.
2. **Required Forms.** Provide Certification, Questionnaire & Requirements Affidavit (Appendix A). Attach Appendix A fully completed and executed. The Certification, Questionnaire & Requirements Affidavit (Appendix A) must be signed by the Prime Respondent.
3. **Minimum Requirements.** Submit verifiable information documenting compliance with each of the Minimum Requirements in Section 0200, Pages 3-4.

TAB 2	Experience and Qualifications of Proposing Team (15 page limit, not counting resumes limited to two pages each)

1. Qualifications of Proposer and Lead Team Participants. Submit detailed information regarding the Proposer's and each Lead Team Participant's experience in the design, construction, financing, operation and maintenance which documents expertise, competence, capability, and capacity in, and record of producing quality work on projects similar to the Project. Include, at a minimum, the following information:

a. Company Information. Provide background information, including company history/organizational structure, years in business for Proposer and each Lead Team Participant, number of employees, and any other information communicating capabilities and experience.

b. Experience and Qualifications on Other Infrastructure Projects. Provide a list of the Proposer's and each Lead Team Participant's experience with comparable design-build, design-build-operate-maintain, or other public or public-private infrastructure projects of size and scope similar to or larger than the Project. Include additional information, as well as a table that includes the project name, type of project, scope of project, years the Project was constructed, hard construction costs for the project or operating/maintenance budget for the project (as applicable), and delivery approach or method. For Lead Investor and Contractor, provide record of projects completed within the contract time and contract price.

c. Experience and Qualifications on Rail or Transit Projects With Emphasis on Streetcars in Urban Settings. Summarize the Proposer's and each Lead Team Participant's experience with similar rail or transit projects with emphasis on streetcar projects in urban or sensitive environmental areas and community areas of comparable size and scope. Include the project name, type of project, scope of project, years constructed, hard costs, and delivery approach or method, and names of key personnel. Highlight any key personnel who will also work on this Project. Identify experience in managing the maintenance of traffic, roadway (or bridge) design and construction, environmental and other permitting, and implementing community relations and outreach programs on projects of similar size and complexity to this Project. For Lead Engineer, provide information demonstrating completion of at least one or more transit facility comparable to the Project.

d. Capacity to Manage and Implement the Project. Provide additional information sufficient to identify Proposer's and each Lead Team Participant's demonstrated capacity to manage and implement projects of $250 million or larger.

e. Prior Working Relationships Between and Among Team Members. Provide information identifying prior working relationships between or among Proposer or Lead Team Participants. Include the project name, type of project, scope of project, years constructed, hard costs, and delivery approach or method, and names of key personnel. Highlight any key personnel who will also work on this Project.

f. Key Personnel and Level of Commitment. Identify and provide job descriptions, resumes and references for the qualified personnel for key positions on the Project, including number of years of experience and areas of expertise for each individual, and list of prior projects comparable in size and scope (or greater) of this Project. Key Personnel (at a minimum) shall include:

- Project Manager
- Construction Manager
- Construction Superintendent
- Design Manager
- Lead Design Engineer
- Independent Quality Manager
- Design Quality Manager

Affirm that all key personnel will be required to be on-site 100% of the time during activities that involve their areas of responsibility. Substitution of Key Personnel will be subject to review and acceptance by the City.

g. Prime Constructor Safety Record . For Prime Constructor, provide its Experience Modification Rate (EMR) and OSHA forms 300 and 300A for the past three (3) years.

TAB 3	Financial Capacity (4 page limit, not counting financial statements and related information)

Submit detailed information sufficient to demonstrate the financial capacity of Proposer and Lead Team Participants and financial guarantors. Include Proposer's, Lead Investor's, financial guarantors, Lead Contractor, Lead Operator and Lead Maintenance most recent annual reviewed/audited financial statement with the auditors' notes. Such statements should include, at a minimum, balance sheets (statements of financial position), and statements of profits and loss statement of net income). City reserves the right to request additional information from any Proposer to determine financial capacity. Proposer shall have no more than ten (10) days to respond to such request. Proposers may provide only one (1) hard copy of the most recent financial statements and one (1) electronic copy in lieu of the request for 11 hard copies and one (1) electronic version.

TAB 4	Approach and Methodology (20 page limit)

1. **Management and Organization**: Proposer shall describe the approach and methodology in accomplishing the following goals of this Project i) an understanding of and approach to the management, technical aspects, maintenance of traffic (and related access to residential and business areas), and risks associated with the Project; ii) an understanding of and approach to how the public-private partnership, or "P3", process and the Proposer's organization will contribute to the success of the Project and meet the City of Miami Beach's Project goals; and iii) an understanding of the risk sharing and the teaming relationship between the Proposer and the City of Miami Beach.

a. **Methodology for integrating the Proposer and Lead Team Participants and their respective areas of expertise:** The narrative should describe the methodology for integrating the Proposer and the different areas of expertise of Lead Team Participants into an efficient and effective organization.

b. **Management Approach:** The management approach must reflect an understanding of the use of the P3 project delivery methodology for transportation projects.

c. **Organization Chart:** Provide an organizational chart(s) showing the "chain of command," with lines identifying participants who are responsible for major functions to be performed, and their reporting relationships, in managing, designing, and building the Project. The organizational chart may be submitted on an 11 x 17 sheet (which shall count as a single page toward the twenty (20) page limit. The chart(s) must show the functional structure of the organization down to the design discipline leader or construction superintendent level and must identify Key Personnel by name. Key Personnel will be committed to the Project. Identify all Lead Team Participants in the chart(s). Identify the critical support elements and relationships of Project management, Project administration, construction management, quality control, safety, environmental compliance, and subcontractor administration.

d. **Organizational Chart Functional Relationships:** For each organizational chart, provide a brief, written description of significant functional relationships among participants and how the proposed organization will function as an integrated team.

2. Approach to P3/Design-Build-Operate-Maintain-Finance. Provide information on a sample approach to finance the Project assuming an availability payment approach that is supported by annual payments during the operation period subject to annual appropriation. Provide information demonstrating the Lead Investor has financial capacity to guarantee an equity contribution of at least $50 million for the Project. Identify potential financing options/sources of funding to finance the Project over a long-term availability payment period.

3. Approach to Design and Construction. Provide information demonstrating an understanding of and sound approach to the development, design and construction of the Project.

a. Provide information identifying how Proposer will incorporate innovative design and other techniques in the Project through the lifecycle of the Project.

b. Describe approach to plan, organize, and execute the design and construction of, and assure the quality and safety of the Project.

c. Describe approach to effectively manage all aspects of the Contract in a quality, timely, and effective manner and integrate the different parts of its organization with the City of Miami Beach in a cohesive and seamless manner.

d. Describe approach to implementing the Project and other potential additional routes (i.e. 17th Street, Alton Road, Dade Boulevard, Meridian Avenue or Convention Center Drive), in terms of schedule (including timeframes for developing a comprehensive agreement following execution of interim agreement, and timeframes for commencement of revenue operations following execution of comprehensive agreement), maintenance of traffic, design, and construction, and how Proposer would approach the Project if both phases were to proceed simultaneously.

4. Approach to Implementation in Complex Urban Environments.

a. Describe Proposer's general approach to integrating the City and identified stakeholders in the various phases of the Project.
2e Proposer's general approach to traffic management, utility identification and relocation, access during construction, pedestrian and parking accommodation, and community outreach.

c. Describe, in general terms, Proposer's anticipated operating approach for the Project.

5. Approach to Vehicle Systems Technology.

a. Provide a detailed description of Proposer's Vehicle/Systems Technology, including but not limited to detailed descriptions and depictions of the proposed vehicles.
b. Provide description of operations and maintenance for the Proposer's Vehicle/Systems Technology, including site requirements;
c. Provide service history for the Vehicle/Systems Technology, including vehicles; and
d.
e. Explain how the Proposer's Vehicle/Systems Technology will be interoperable with the Direct Connect Project.
f. Provide a sample schedule with timeframes for delivery of the Vehicles/Systems Technology for the Project, including timeframes for the delivery of the vehicles. Provide information demonstrating delivery of comparable vehicles within the timeframes proposed in the sample schedule. Provide information identifying, for the Vehicle/Systems Supplier's projects in the last five years that meet the Minimum Requirements, the actual vehicle delivery time periods for each such project, with the time periods measured from execution of the project agreement to delivery to each project site.
g. Provide description of how the Vehicle/Systems Technology will function or operate continuously, in areas prone to flooding and if not under what conditions must the service be suspended such as specific "level of water", water type (fresh water from rain compared to salt water) how long the water will be in place, etc.
h. Describe how the Vehicle/Systems will be charged, including, if applicable, how vehicle batteries or supercapacitors will be charged at passenger stops along the project route. Describe Proposer's approach to ensuring that the application of the power supply is unobtrusive and incorporated within the architectural features of the design for the passenger stops.

6. Approach to Process for Developing Comprehensive Agreement.

a. Provide an estimated schedule for pre-development activities pursuant to an interim agreement, including a schedule for providing a final, firm price and for negotiation of a comprehensive agreement or the Project. Identify the specific information and commitments you will require from the City in order to meet the proposed schedule.
b. Provide a schedule and proposed approach for achieving financial close after execution of the comprehensive agreement.
c. Identify any financial commitments or obligations you will require from the City as part of the Interim Agreement and/or prior to execution of the comprehensive agreement and financial close for your team to move forward on the Project. These are commitments required prior to financial close and should include items required by the proposer should the City decide to terminate the process and not proceed to a comprehensive agreement.

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SECTION 0400 PROPOSAL EVALUATION

1. Evaluation Committee. An Evaluation Committee, appointed by the City Manager, shall meet to evaluate and rank each Proposal in accordance with the requirements set forth in this PRD. If the City desires further information, Proposers may be requested to make additional written submissions of a clarifying nature or oral presentations to the Evaluation Committee. The evaluation of Proposals will proceed as specified in Section 0300(1). The Evaluation Committee is advisory only. Evaluation Committee's recommendations will be forwarded to the City Manager who will utilize the results to make a recommendation to the City Commission. The City Manager will make the final recommendation concerning the ranking of Proposers, and such final recommendation may or may not be consistent with the Evaluation Committee's ranking, and will consider the following:

(1) The ability, capacity and skill of the Proposer to perform the contract.

(2) Whether the Proposer can perform the contract within the time specified, without delay or interference.

(3) The character, integrity, reputation, judgment, experience and efficiency of the Proposer.

(4) The quality of performance of previous contracts.

(5) The previous and existing compliance by the Proposer with laws and ordinances relating to the contract.

1. Evaluation Process. The Evaluation Committee shall meet to evaluate each response and rank Proposers in order of preference, as provided in Florida Statute 287.05712, and based on consideration of the professional qualifications of the Proposers (including Lead Team Participants), and the following factors:, in no particular order:

- Compliance with the Minimum Requirements;
- Experience and Qualifications of Proposer and each of the Lead Team Participants, including consideration of the information requested in Tab 2 of Section 0300 of the PRD;
- Financial capability of the Proposer; and
- Proposer's Approach and Methodology, including consideration of the information requested in Tab 4 of Section 0300.

APPENDIX A

MIAMIBEACH

Proposal Certification, Questionnaire & Requirements Affidavit

PRD 2016-071-KB

Notice of Receipt
of Unsolicited Proposal and Request for Alternative Proposals
for
Light Rail/Modern Streetcar Project
in
Miami Beach

PROCUREMENT DEPARTMENT
1755 Meridian Avenue, 3rd Floor
Miami Beach, Florida 33139

Solicitation No:	Solicitation Title:	
PRD 2016-071-KB	Notice of Receipt of Unsolicited Proposal and Request for Alternative Proposals for Light Rail/Modern Streetcar Project in Miami Beach	
Procurement Contact:	Tel:	Email:
Kristy Bada	305-673-7490	KristyBada@MiamiBeachFL.gov

PROPOSAL CERTIFICATION, QUESTIONNAIRE & REQUIREMENTS AFFIDAVIT

Purpose: The purpose of this Proposal Certification, Questionnaire and Requirements Affidavit Form is to inform prospective Proposers of certain solicitation and contractual requirements, and to collect necessary information from Proposers in order that certain portions of responsiveness, responsibility and other determining factors and compliance with requirements may be evaluated. **This Proposal Certification, Questionnaire and Requirements Affidavit Form is a REQUIRED FORM that must be submitted fully completed and executed.**

1. General Proposer Information.

FIRM NAME:	
No of Years in Business:	No of Years in Business Locally:
OTHER NAME(S) PROPOSER HAS OPERATED UNDER IN THE LAST 10 YEARS:	
FIRM PRIMARY ADDRESS (HEADQUARTERS):	
CITY:	
STATE:	ZIP CODE:
TELEPHONE NO.:	
TOLL FREE NO.:	
FAX NO.:	
FIRM LOCAL ADDRESS:	
CITY:	
STATE:	ZIP CODE:
PRIMARY ACCOUNT REPRESENTATIVE FOR THIS ENGAGEMENT:	
ACCOUNT REP TELEPHONE NO.:	
ACCOUNT REP TOLL FREE NO.:	
ACCOUNT REP EMAIL:	
FEDERAL TAX IDENTIFICATION NO.:	

The City reserves the right to seek additional information from Proposer or other source(s), including but not limited to: any firm or principal information, applicable licensure, resumes of relevant individuals, client information, financial information, or any information the City deems necessary to evaluate the capacity of the Proposer to perform in accordance with contract requirements.

1. **Veteran Owned Business.** Is Proposer claiming a veteran owned business status?

☐ YES ☐ NO

SUBMITTAL REQUIREMENT: Proposers claiming veteran owned business status shall submit a documentation proving that firm is certified as a veteran-owned business or a service-disabled veteran owned business by the State of Florida or United States federal government, as required pursuant to ordinance 2011-3748.

2. **Conflict Of Interest.** All Proposers must disclose, in their Proposal, the name(s) of any officer, director, agent, or immediate family member (spouse, parent, sibling, and child) who is also an employee of the City of Miami Beach. Further, all Proposers must disclose the name of any City employee who owns, either directly or indirectly, an interest of ten (10%) percent or more in the Proposer entity or any of its affiliates.

SUBMITTAL REQUIREMENT: Proposers must disclose the name(s) of any officer, director, agent, or immediate family member (spouse, parent, sibling, and child) who is also an employee of the City of Miami Beach. Proposers must also disclose the name of any City employee who owns, either directly or indirectly, an interest of ten (10%) percent or more in the Proposer entity or any of its affiliates

3. **Suspension, Debarment or Contract Cancellation.** The Proposer and each Lead Team Participant must not have been indicted, disqualified, debarred, or suspended from the performance of any work for any federal, state or local government in the United States in the last seven (7) years, or removed via contract cancellation due to non-performance of work for any federal, state or local government in the United States in the last seven (7) years. Has Proposer or Lead Team Participant ever been indicted, disqualified, removed, debarred or suspended, or had a contract cancelled due to non-performance by any public sector agency?

☐ YES ☐ NO

SUBMITTAL REQUIREMENT: If answer to above is "YES," Proposer shall submit a statement detailing the reasons that led to action(s).

4. **Vendor Campaign Contributions.** Proposers are expected to be or become familiar with, the City's Campaign Finance Reform laws, as codified in Sections 2-487 through 2-490 of the City Code. Proposers shall be solely responsible for ensuring that all applicable provisions of the City's Campaign Finance Reform laws are complied with, and shall be subject to any and all sanctions, as prescribed therein, including disqualification of their Proposals, in the event of such non-compliance.

SUBMITTAL REQUIREMENT: Submit the names of all individuals or entities (including your sub-consultants) with a controlling financial interest as defined in solicitation. For each individual or entity with a controlling financial interest indicate whether or not each individual or entity has contributed to the campaign either directly or indirectly, of a candidate who has been elected to the office of Mayor or City Commissioner for the City of Miami Beach.

5. **Code of Business Ethics.** Pursuant to City Resolution No.2000-23879, each person or entity that seeks to do business with the City shall adopt a Code of Business Ethics ("Code") and submit that Code to the Department of Procurement Management with its Proposal/response or within five (5) days upon receipt of request. The Code shall, at a minimum, require the Proposer, to comply with all applicable governmental rules and regulations including, among others, the conflict of interest, lobbying and ethics provision of the City of Miami Beach and Miami Dade County.

   SUBMITTAL REQUIREMENT: Proposer shall submit firm's Code of Business Ethics. In lieu of submitting Code of Business Ethics, Proposer may submit a statement indicating that it will adopt, as required in the ordinance, the City of Miami Beach Code of Ethics, available at www.miamibeachfl.gov/procurement/.

6. **Public Entity Crimes.** Section 287.133(2)(a), Florida Statutes, as currently enacted or as amended from time to time, states that a person or affiliate who has been placed on the convicted vendor list following a conviction for a public entity crime may not submit a Proposal, Proposal, or reply on a contract to provide any goods or services to a public entity; may not submit a Proposal, Proposal, or reply on a contract with a public entity for the construction or repair of a public building or public work; may not submit Proposals, Proposals, or replies on leases of real property to a public entity; may not be awarded or perform work as a contractor, supplier, subcontractor, or consultant under a contract with any public entity; and may not transact business with any public entity in excess of the threshold amount provided in s. 287.017 for CATEGORY TWO for a period of 36 months following the date of being placed on the convicted vendor list.

   SUBMITTAL REQUIREMENT: No additional submittal is required. By virtue of executing this affidavit document, Proposer agrees with the requirements of Section 287.133, Florida Statutes, and certifies it has not been placed on convicted vendor list.

7. **Litigation History**. Has Proposer or any of its Lead Team Participants or principal or employee of the Proposer (relating to professional endeavors only) been the subject of any claims, arbitrations, administrative hearings and lawsuits brought by or against the Proposer (including Lead Team Participants) or its predecessor organization(s) during the last five (5) years.

☐ YES ☐ NO

SUBMITTAL REQUIREMENT: If yes, list all case names; case, arbitration or hearing identification numbers; the name of the project over which the dispute arose; a description of the subject matter of the dispute; and the final outcome of the claim.

8. **Bankruptcy**. Has the Proposer or any of its Lead Team Participants filed any bankruptcy petitions (voluntary or involuntary) which have been filed by or against the Proposer, its parent or subsidiaries or predecessor organizations during the past five (5) years. Include in the description the disposition of each such petition.

☐ YES ☐ NO

SUBMITTAL REQUIREMENT: If yes, list and describe all bankruptcy petitions (voluntary or involuntary) which have been filed by or against the Proposer, its parent or subsidiaries or predecessor organizations during the past five (5) years. Include in the description the disposition of each such petition.

9. **Principals**. Provide the names of all individuals or entities with a controlling financial interest in Proposer. The term "controlling financial interest" shall mean the ownership, directly or indirectly, of 10% or more of the outstanding capital stock in any corporation or a direct or indirect interest of 10% or more in a firm. The term "firm" shall mean any corporation, partnership, business trust or any legal entity other than a natural person.

10. Surety Companies. Has a surety company ever intervened to assist a governmental agency or other client of the Proposer or Lead Contractor in completing work that the Proposer or Lead Contractor failed to complete?

☐ YES ☐ NO

SUBMITTAL REQUIREMENT: If yes, submit owner names, addresses and telephone numbers, and surety and project names, for all projects for which you have performed work, where your surety has intervened to assist in completion of the project, whether or not a claim was made.

11. Has Proposer or Lead Team Participants ever failed to complete performance of a contract? If so, where and why?

☐ YES ☐ NO

12. **Acknowledgement of Addendum.** After issuance of solicitation, the City may release one or more addendum to the solicitation which may provide additional information to Proposers or alter solicitation requirements. The City will strive to reach every Proposer having received solicitation through the City's e-procurement system, PublicPurchase.com. However, Proposers are solely responsible for assuring they have received any and all addendum issued pursuant to solicitation. This Acknowledgement of Addendum section certifies that the Proposer has received all addendum released by the City pursuant to this solicitation. Failure to obtain and acknowledge receipt of all addendum may result in Proposal disqualification.

Initial to Confirm Receipt		Initial to Confirm Receipt		Initial to Confirm Receipt	
	Addendum 1		Addendum 6		Addendum 11
	Addendum 2		Addendum 7		Addendum 12
	Addendum 3		Addendum 8		Addendum 13
	Addendum 4		Addendum 9		Addendum 14
	Addendum 5		Addendum 10		Addendum 15

If additional confirmation of addendum is required, submit under separate cover.

DISCLOSURE AND DISCLAIMER SECTION

The solicitation referenced herein is being furnished to the recipient by the City of Miami Beach (the "City") for the recipient's convenience. Any action taken by the City in response to Proposals made pursuant to this solicitation, or in making any award, or in failing or refusing to make any award pursuant to such Proposals, or in cancelling awards, or in withdrawing or cancelling this solicitation, either before or after issuance of an award, shall be without any liability or obligation on the part of the City.

In its sole discretion, the City may withdraw the solicitation either before or after receiving Proposals, may accept or reject Proposals, and may accept Proposals which deviate from the solicitation, as it deems appropriate and in its best interest. In its sole discretion, the City may determine the qualifications and acceptability of any party or parties submitting Proposals in response to this solicitation.

Following submission of a Proposal or Proposal, the applicant agrees to deliver such further details, information and assurances, including financial and disclosure data, relating to the Proposal and the applicant including, without limitation, the applicant's affiliates, officers, directors, shareholders, partners and employees, as requested by the City in its discretion.

The information contained herein is provided solely for the convenience of prospective Proposers. It is the responsibility of the recipient to assure itself that information contained herein is accurate and complete. The City does not provide any assurances as to the accuracy of any information in this solicitation.

Any reliance on these contents, or on any permitted communications with City officials, shall be at the recipient's own risk. Proposers should rely exclusively on their own investigations, interpretations, and analyses. The solicitation is being provided by the City without any warranty or representation, express or implied, as to its content, its accuracy, or its completeness. No warranty or representation is made by the City or its agents that any Proposal conforming to these requirements will be selected for consideration, negotiation, or approval.

The City shall have no obligation or liability with respect to this solicitation, the selection and the award process, or whether any award will be made. Any recipient of this solicitation who responds hereto fully acknowledges all the provisions of this Disclosure and Disclaimer, is totally relying on this Disclosure and Disclaimer, and agrees to be bound by the terms hereof. Any Proposals submitted to the City pursuant to this solicitation are submitted at the sole risk and responsibility of the party submitting such Proposal.

This solicitation is made subject to correction of errors, omissions, or withdrawal from the market without notice. Information is for guidance only, and does not constitute all or any part of an agreement.

The City and all Proposers will be bound only as, if and when a Proposal (or Proposals), as same may be modified, and the applicable definitive agreements pertaining thereto, are approved and executed by the parties, and then only pursuant to the terms of the definitive agreements executed among the parties. Any response to this solicitation may be accepted or rejected by the City for any reason, or for no reason, without any resultant liability to the City.

The City is governed by the Government-in-the-Sunshine Law, and all Proposals and supporting documents shall be subject to disclosure as required by such law. All Proposals shall be submitted in sealed Proposal form and shall remain confidential to the extent permitted by Florida Statutes, until the date and time selected for opening the responses. At that time, all documents received by the City shall become public records.

Proposers are expected to make all disclosures and declarations as requested in this solicitation. By submission of a Proposal, the Proposer acknowledges and agrees that the City has the right to make any inquiry or investigation it deems appropriate to substantiate or supplement information contained in the Proposal, and authorizes the release to the City of any and all information sought in such inquiry or investigation. Each Proposer certifies that the information contained in the Proposal is true, accurate and complete, to the best of its knowledge, information, and belief.

Notwithstanding the foregoing or anything contained in the solicitation, all Proposers agree that in the event of a final unappealable judgment by a court of competent jurisdiction which imposes on the City any liability arising out of this solicitation, or any response thereto, or any action or inaction by the City with respect thereto, such liability shall be limited to $10,000.00 as agreed-upon and liquidated damages. The previous sentence, however, shall not be construed to circumvent any of the other provisions of this Disclosure and Disclaimer which imposes no liability on the City.

In the event of any differences in language between this Disclosure and Disclaimer and the balance of the solicitation, it is understood that the provisions of this Disclosure and Disclaimer shall always govern. The solicitation and any disputes arising from the solicitation shall be governed by and construed in accordance with the laws of the State of Florida.

PROPOSER CERTIFICATION

I hereby certify that: I, as an authorized agent of the Proposer, am submitting the following information as my firm's Proposal; Proposer agrees to complete and unconditional acceptance of the terms and conditions of this document, inclusive of this solicitation, all attachments, exhibits and appendices and the contents of any Addenda released hereto, and the Disclosure and Disclaimer Statement; Proposer agrees to be bound to any and all specifications, terms and conditions contained in the solicitation, and any released Addenda and understand that the following are requirements of this solicitation and failure to comply will result in disqualification of Proposal submitted; Proposer has not divulged, discussed, or compared the Proposal with other Proposers and has not colluded with any other Proposer or party to any other Proposal; Proposer acknowledges that all information contained herein is part of the public domain as defined by the State of Florida Sunshine and Public Records Laws; all responses, data and information contained in this Proposal, inclusive of the Proposal Certification, Questionnaire and Requirements Affidavit are true and accurate. Proposer further certifies that Proposer (and Lead Team Participants) commit to serving as part of a Proposer team for a period of [360] calendar days from the Commission's ranking of proposals, to participate in interim agreement negotiations with the next-ranked Proposer should the City be unable to successfully negotiate an interim agreement, or subsequently, a comprehensive agreement, with the successful Proposer.

Name of Proposer's Authorized Representative:	Title of Proposer's Authorized Representative:
Signature of Proposer's Authorized Representative:	Date:

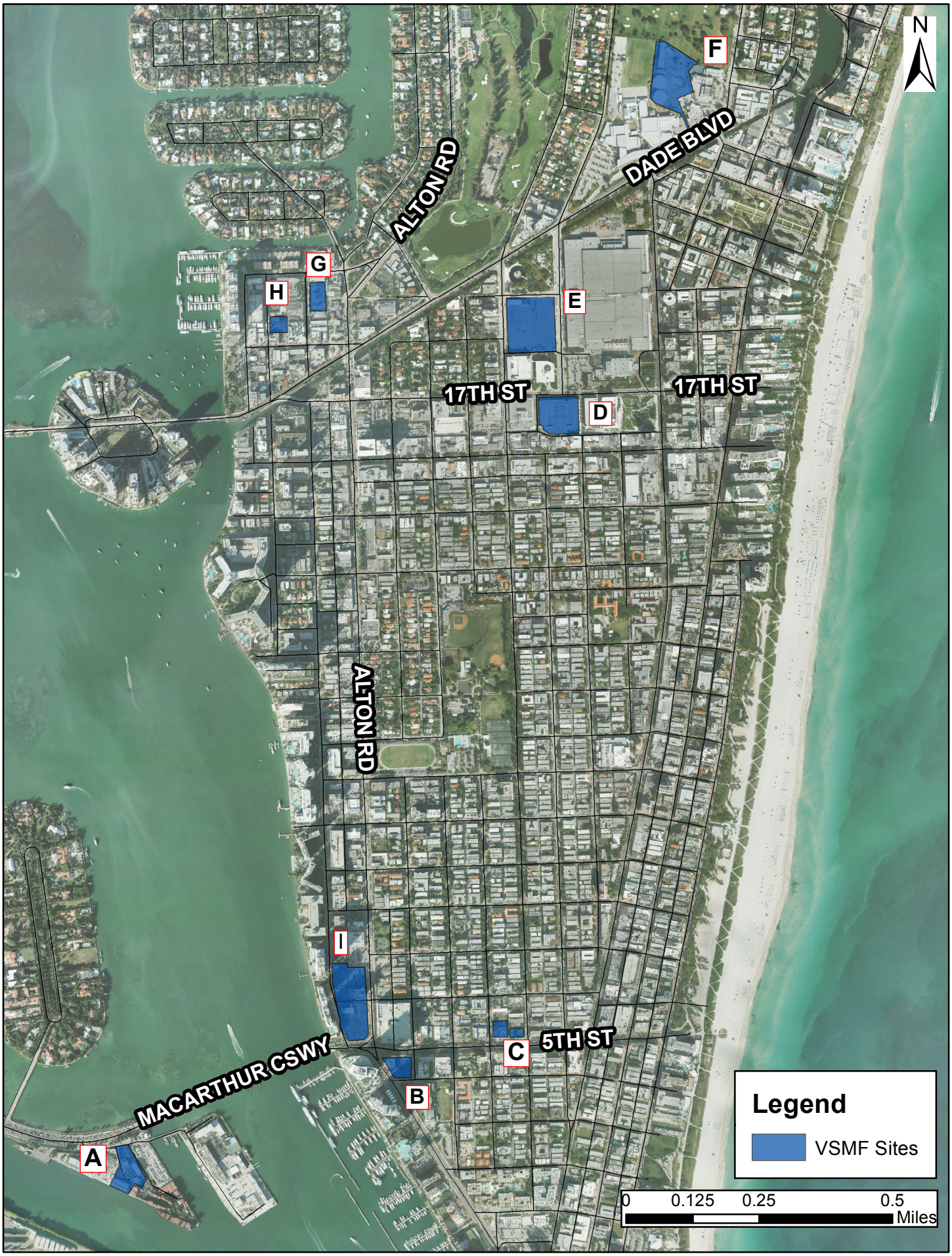
State of FLORIDA)
)
County of _____)

On this ____day of _____, 20__, personally appeared before me _____ who stated that (s)he is the _____ of _____, a corporation, and that the instrument was signed in behalf of the said corporation by authority of its board of directors and acknowledged said instrument to be its voluntary act and deed. Before me:

_____
Notary Public for the State of Florida
My Commission Expires: _____.

APPENDIX B

Potential Sites for Miami Beach Streetcar VSMF



VSMF Site Description	Size (acres)	Number of Parcels	Number of Property Owners	Ownership	Zoning Classification	Site Location / Issues	Recommendation
A: Terminal Island	2.16	1	1	Public	Urban light industrial / Civic and government use	Site is approximately 0.5 miles from project route via MacArthur Causeway. Site serves the Fisher Island ferry. Site is occupied by City Fleet Management and Sanitation. Over one mile of non-revenue track (bi-directional) across high-level bridge and Federal navigable makes this site complex environmentally and cost not feasible.	Drop
B: Burger King and P5 Lot	1.05	5	2	Private + Public	Commercial performance standard, general mixed use / Civic and government use	Site is located at 5th Street and Alton Road. Site is at intersection of two legs of the proposed alignment. Not large enough.	Drop
C: Stan's Shell Station	0.83	3	3	Private	Commercial performance standard, general mixed use	Located at 5th Street and Jefferson Avenue. Not large enough.	Drop
D: G5/17th Street Garage	3.22	1	1	Public	Convention center district	Located at 17th Street and Meridian Court. Assumes demolition of existing garage with opportunity for joint development with the VSMF.	Advance
E: 18th Street and Meridian Lot	5.77	10	1	Public	Convention center district	Located at 19th Street and Meridian Avenue north of City Hall and west of Convention Center. Assume VSMF is developed under the proposed Convention Center Park and avoids park impacts.	Advance
F: PW Operations Yard	4.20	1	1	Public	Civic and government use	Located at 23rd Street and Dade Boulevard/Pine Tree Drive. Site is retained for further consideration if it does not impact the Fire Station/EOC facility. Other on-site functions potentially may be relocated to another site.	Advance
G: FPL Substation	1.07	1	1	Private	Urban light industrial	FPL Venetian Substation located at 1925 West Avenue. Is it feasible to co-locate VSMF with FPL substation?	Drop
H: Bay Rd	0.55	3	2	Public	Civic and government use	Located on 1800 block of Bay Road. Site has recently been developed as City Property Management Facility.	Drop
I: Crescent Heights	4.10	2	1	Private	Commercial performance standard, general mixed use / Commercial, medium intensity	Located at Alton Road and 5th Street. Site is at intersection of two legs of the proposed alignment. Property owner plans to redevelop site, but has indicated an interest in accommodating an intermodal transfer facility.	Drop

OPERATIONAL PARAMETERS AND CONSIDERATIONS

These criteria establish the minimum standards for the identification of the vehicle maintenance and storage facility (VSMF) of the Miami Beach streetcar.

- Minimum practical size 2 acres to accommodate fleet of 10 – 15 streetcar vehicles (five-section vehicles approximately 90 to 120 feet in length). Assumes staff and visitor parking not provided on site.
- Site should be oblong or rectangular in shape.
- Site should be located close to the streetcar route to minimize non-revenue track, about 0.25 miles.
- Site should have good access for delivery trucks.
- Site should accommodate streetcar vehicle maintenance, streetcar vehicle storage, streetcar washing facility, streetcar spare parts, traction-power substation, Operations Control Center (OCC), maintenance of way parts and equipment, service and repair area including pits and mezzanine, operations and administrative staff areas.

APPENDIX C

Condensed Title:

A Resolution Of The Mayor And City Commission Of The City Of Miami Beach County, Florida, Accepting The Updated Unified Regional Sea Level Rise Projection Of The Southeast Florida Regional Climate Change Compact.

Key Intended Outcome Supported:

N/A

Supporting Data (Surveys, Environmental Scan, etc.): N/A

Item Summary/Recommendation:

The In 2011, the Southeast Florida Regional Climate Change Compact (Compact) released the Unified Regional Sea Level Rise (SLR) Projection for Southeast Florida. The Southeast Florida Regional Climate Change Compact Technical Ad Hoc Work Group (Work Group) developed the original projection and, at that time, recommended review and update of the SLR projection following the release of the Fifth Assessment Report by the United Nations Intergovernmental Panel on Climate Change (IPCC, 2013), the Third National Climate Assessment by the United States Global Change Research Program (NCA, 2014) and consideration of the pertinent climate data supporting these assessments.

In September 2014, the Work Group, which includes expert researchers, senior scientists, and lead engineers representing the U.S. Army Corps of Engineers, the National Oceanographic and Atmospheric Administration, the South Florida Water Management District, the University of Miami, Florida International University and Florida Atlantic University, was reconvened to review scientific literature released since 2011 to update the SLR projection. The updated projection and associated guidance document were finalized in October 2015.

The regional projection highlights three planning horizons:

1. Short term, by 2030, sea level rise is projected to be 6 to 10 inches above 1992 mean sea level.
2. Medium term, by 2060, sea level is project to rise 14 to 34 inches above 1992 mean sea level.
3. Long term, by 2100, sea level is project to rise 31 to 81 inches above 1992 mean sea level.

The purpose of developing a regional unified sea level rise projection is to assist with planning processes across multiple disciplines regionally and locally. This unified projection provides decision makers with a better understanding of the potential vulnerabilities and provides a basis for outlining adaptation strategies regionally and locally. Once the Mayor and Commission have adopted the updated unified regional SLR Projection, the Environment & Sustainability Department will be hosting a technical training session for all departments.

THE ADMINISTRATION RECOMMENDS APPROVING THE RESOLUTION.

Advisory Board Recommendation:

Financial Information:

Source of Funds:		Amount	Account
	1		
OBPI	Total		

City Clerk's Office Legislative Tracking:

Elizabeth Wheaton ext. 6121

Sign-Offs:

Assistant City Manager	City Manager
SMT	JLM

MIAMIBEACH

AGENDA ITEM R7C
DATE 3-9-16

MIAMIBEACH

City of Miami Beach, 1700 Convention Center Drive, Miami Beach, Florida 33139, www.miamibeachfl.gov

COMMISSION MEMORANDUM

TO: Mayor Philip Levine and Members of the City Commission

FROM: Jimmy L. Morales, City Manager

DATE: March 9, 2016

SUBJECT: **A RESOLUTION OF THE MAYOR AND CITY COMMISSION OF THE CITY OF MIAMI BEACH COUNTY, FLORIDA, ACCEPTING THE UPDATED UNIFIED REGIONAL SEA LEVEL RISE PROJECTION OF THE SOUTHEAST FLORIDA REGIONAL CLIMATE CHANGE COMPACT FOR PLANNING PURPOSES.**

ADMINISTRATION RECOMMENDATION

The Southeast Florida Climate Change Compact Sea Level Rise Work Group has released the updated Unified Sea Level Rise Projection for Southeast Florida. The purpose of developing a regional unified sea level rise projection is to assist with planning processes across multiple disciplines regionally and locally. This unified projection provides decision makers with a better understanding of the potential vulnerabilities and provides a basis for outlining adaptation strategies regionally and locally. The Administration recommends approving the resolution and using this tool for planning purposes.

BACKGROUND

The In 2011, the Southeast Florida Regional Climate Change Compact (Compact) released the Unified Regional Sea Level Rise (SLR) Projection for Southeast Florida. The Southeast Florida Regional Climate Change Compact Technical Ad Hoc Work Group (Work Group) developed the original projection and, at that time, recommended review and update of the SLR projection following the release of the Fifth Assessment Report by the United Nations Intergovernmental Panel on Climate Change (IPCC, 2013), the Third National Climate Assessment by the United States Global Change Research Program (NCA, 2014) and consideration of the pertinent climate data supporting these assessments.

In September 2014, the Work Group, which includes local and regional expert researchers, senior scientists, and lead engineers representing the U.S. Army Corps of Engineers, the National Oceanographic and Atmospheric Administration, the South Florida Water Management District, the University of Miami, Florida International University and Florida Atlantic University, was reconvened to review scientific literature released since 2011 to update the SLR projection. The updated projection and associated guidance document were finalized in October 2015.

The guidance document provides a summary of the projections; publications reviewed and discussed by the Work Group; the methodology for deriving the projection; description of the recommended unified regional SRL projection; and additional recommendations from the Work Group.

The 2015 update presents several adjustments to the 2011 Regional SLR Projection:

1. The baseline year has been adjusted to 1992 from 2010 to be consistent with other published projections;
2. The number of planning horizons has been extended from two (2030 and 2060) to three (2100) now that the longer-term influence of ice melt on sea level rise acceleration is better understood;
3. The influence of a slowing Gulf Stream and Florida Current on local sea level rise has been considered and incorporated; and
4. An upper curve has been added for planning guidance for those projects for high risk critical infrastructure projects with design lives in excess of 50 years.

The regional projection highlights three planning horizons:

1. Short term, by 2030, sea level rise is projected to be 6 to 10 inches above 1992 mean sea level.
2. Medium term, by 2060, sea level is project to rise 14 to 34 inches above 1992 mean sea level.
3. Long term, by 2100, sea level is project to rise 31 to 81 inches above 1992 mean sea level.

Since three inches of the projected rise has already occurred since the 1992 base year, this amount can be subtracted from the projections in estimating additional rise relative to today.

The guidance document describes the recommended application of the projection as it relates to both high and low risk projects and short and long-term planning efforts. Once the Mayor and Commission have adopted the updated unified regional SLR Projection, the Environment & Sustainability Department will be hosting a technical training session for all departments.

This is an important planning tool that was not available prior to the first 2011 projection. These are specifically regional projections for local governments to use. Many local governments under the four Counties within the Compact Region are adopting this planning tool.

CONCLUSION

The Administration recommends approving the resolution.

Attached: Southeast Florida Regional Climate Change Compact's 2015 Unified Regional Sea Level Rise Projection Guidance Document

SMT/ESW/FCT

RESOLUTION NO. _____

A RESOLUTION OF THE MAYOR AND CITY COMMISSION OF THE CITY OF MIAMI BEACH COUNTY, FLORIDA, ADOPTING THE UPDATED UNIFIED REGIONAL SEA LEVEL RISE PROJECTION OF THE SOUTHEAST FLORIDA REGIONAL CLIMATE CHANGE COMPACT FOR PLANNING PURPOSES.

WHEREAS, Florida is one of the areas of the country that is most vulnerable to the consequences of global climate change; and

WHEREAS, Southeast Florida is experiencing and will continue to experience the impacts of a changing climate, specifically sea level rise; and

WHEREAS, in 2010, in recognition of the need for immediate, coordinated, and visionary action to address the impacts of a changing climate, Miami-Dade, Palm Beach, Broward, and Monroe Counties ("Compact Partners") entered into the Southeast Florida Regional Climate Change Compact ("Compact") to study, promote, and strengthen the economic and environmental resilience of communities in the Southeast Florida region; and

WHEREAS, in 2011, the Southeast Florida Regional Climate Change Compact Technical Ad Hoc Work Group ("Work Group") was convened to develop the Unified Regional Sea Level Rise ("SLR") Projection for Southeast Florida; and

WHEREAS, the Work Group includes expert researchers, senior scientists, and lead engineers representing the U.S. Army Corps of Engineers, the National Oceanographic and Atmospheric Administration, the South Florida Water Management District, the University of Miami, Florida International University and Florida Atlantic University; and

WHEREAS, in September 2014, the Work Group was reconvened to review scientific literature released since 2011 to update the SLR projection; and

WHEREAS, the updated SLR projection and associated guidance document were finalized in October 2015; and

WHEREAS, the updated SLR projection and guidance document provides decision makers with a better understanding of the region's potential vulnerabilities and a basis for outlining adaptation strategies on a local and regional basis.

NOW, THEREFORE, BE IT RESOLVED BY THE MAYOR AND CITY COMMISSION OF THE CITY OF MIAMI BEACH, FLORIDA, that the Mayor and City Commission hereby adopt the updated Unified Regional Sea Level Rise Projection of the Southeast Florida Regional Climate Change Compact.

This Resolution shall become effective upon adoption.

PASSED and **ADOPTED** this _____ day of _____, 2016.

ATTEST:

Rafael E. Granado
City Clerk

Philip Levine
Mayor

APPROVED AS TO
FORM & LANGUAGE
& FOR EXECUTION

City Attorney

3-1-16
Date

NK

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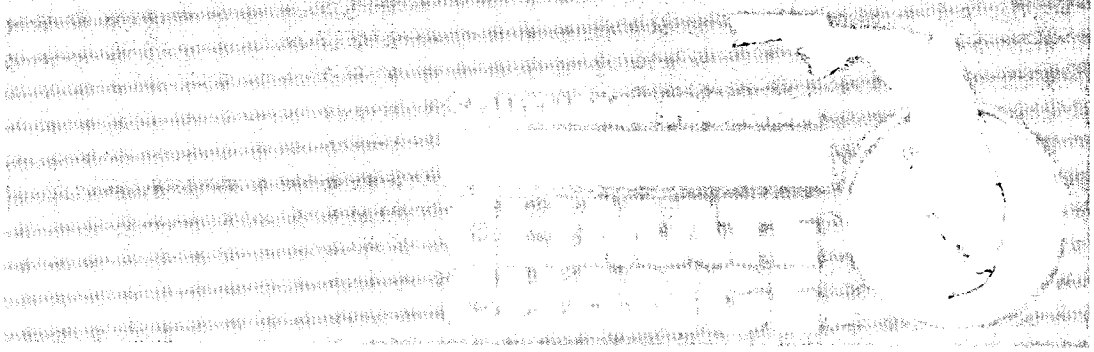
UNIFIED SEA LEVEL RISE PROJECTION

SOUTHEAST FLORIDA



CONTENTS

Recommended Citation

Southeast Florida Regional Climate Change Compact Sea Level Rise Work Group (Compact). October 2015. *Unified Sea Level Rise Projection for Southeast Florida.* A document prepared for the Southeast Florida Regional Climate Change Compact Steering Committee. 35 p.

EXECUTIVE SUMMARY

The Southeast Florida Regional Climate Change Compact reconvened the Sea Level Rise Work Group for the purpose of updating the unified regional projection based on global projections, guidance documents and scientific literature released since the original regional projection in 2011 (Compact, 2011). The objective of the unified sea level rise projection for the Southeast Florida region remains consistent that the projection is for use by the Climate Compact Counties and partners for planning purposes to aid in understanding of potential vulnerabilities and to provide a basis for developing risk informed adaptation strategies for the region. For the 2015 update, the starting point for all sea level rise projections has been shifted from 2010 to 1992. This allows for direct use of local tide station information to convert projections into local water surface elevations for flood vulnerability studies, and is consistent with current guidance from the U.S. Army Corps of Engineers (USACE) and the National Oceanographic and Atmospheric Agency (NOAA). The Unified Sea Level Rise projection for Southeast Florida has also been extended to 2100 in recognition of the need for longer range guidance for major infrastructure and other long term investments now being planned.

In the short term, sea level rise is projected to be 6 to 10 inches by 2030 and 14 to 26 inches by 2060 (above the 1992 mean sea level). In the long term, sea level rise is projected to be 31 to 61 inches by 2100. For critical infrastructure projects with design lives in excess of 50 years, use of the upper curve is recommended with planning values of 34 inches in 2060 and 81 inches in 2100. The National Aeronautics and Space Administration Jet Propulsion Laboratory (2015) has reported the average global sea level has risen almost 3 inches between 1992 and 2015 based on satellite measurements. Sea level rise in South Florida has been of similar magnitude over the same period (NOAA, 2015) but is anticipated to outpace the global average due to ongoing variations in the Florida Currents and Gulf Stream.

Projected sea level rise, especially by 2060 and beyond, has a significant range of variation as a result of uncertainty in future greenhouse gas emissions and their geophysical effects, the incomplete quantitative understanding of all geophysical processes that might affect the rate of sea level rise in climate models and the limitations of current climate models to predict the future. As such, the Work Group recommends that the unified sea level rise projection include three curves, in descending order, the NOAA High Curve, the USACE High Curve and a curve corresponding to the median of the IPCC AR5 RCP8.5 scenario, with specific guidance as to how and when they should be used in planning. This guidance document describes the recommended application of the projection as it relates to both high and low risk projects and short and long-term planning efforts. Also, the Work Group recommends that this guidance be updated every

five to seven years because of the ongoing advances in scientific knowledge related to global climate change and potential impacts.

INTRODUCTION

WHO SHOULD USE THIS PROJECTION AND GUIDANCE DOCUMENT?

The Unified Sea Level Rise Projection for Southeast Florida is intended to be used for planning purposes by a variety of audiences and disciplines when considering sea level rise in reference to both short and long-term planning horizons and infrastructure design in the Southeast Florida area.

HOW SHOULD THE REGIONAL PROJECTION BE APPLIED?

The projection (*Unified Sea Level Rise Projection for Southeast Florida)* contains a graph and table describing the rise in sea level from 1992 through the turn of the current century. The projection can be used to estimate future sea level elevations in Southeast Florida and the relative change in sea level from today to a point in the future. *Guidance for Application* contains directions and specific examples of how the projection can be used by local governments, planners, designers and engineers and developers. This regional projection is offered to ensure that all major infrastructure projects throughout the Southeast Florida region have the same basis for design and construction relative to future sea level.

WHAT ARE THE IMPACTS ASSOCIATED WITH SEA LEVEL RISE?

The consequences associated with sea level rise include direct physical impacts such as coastal inundation of inland areas, increased frequency of flooding in vulnerable coastal areas, increased flooding in interior areas due to impairment of the region's stormwater infrastructure i.e. impacts to gravity drainage systems and features in the regional water management canal system, saltwater intrusion into the aquifer and local water supply wells, and contamination of the land and ocean with pollutants and debris and hazardous materials released by flooding. Consequences also include cascading socio-economic impacts such as displacement, decrease in property values and tax base, increases in insurance costs, loss of services and impaired access to infrastructure. The likelihood and extent to which these impacts will occur is dependent upon the factors influencing the rate of sea level rise such as the amount of greenhouse gases emitted globally, rate of melting of land-based ice sheets, the decisions and investments made by communities to increase their climate resilience and the many interconnected processes described in the *Appendix B: State* of Science Update. One of the values of this sea level rise projection is the ability to perform scenario testing to better understand the potential impacts and timeline of sea level rise within the Southeast Florida community.

WHO DEVELOPED THE UNIFIED SEA LEVEL RISE PROJECTION FOR SOUTHEAST FLORIDA?

In 2010, the Southeast Florida Regional Climate Change Compact Steering Committee organized the first Regional Climate Change Compact Technical Ad hoc Work Group (Work Group). Their objective was to develop a unified sea level rise projection for the Southeast Florida region for use by the Climate Compact Counties and partners. Its primary use was for planning purposes to aid in understanding of potential vulnerabilities and to provide a basis for outlining adaptation strategies for the region. The Work Group reviewed existing projections and scientific literature and developed a unified regional projection for the period from 2010 to 2060 (Compact, 2011). The projection highlighted two planning horizons: 1) by 2030, sea level rise was projected to be 3 to 7 inches above the 2010 mean sea level and 2) by 2060, sea level rise was projected to be 9 to 24 inches above the 2010 mean sea level. In anticipation of the release of the United Nations Intergovernmental Panel on Climate Change Fifth Assessment Report (IPCC, 2013), the Sea Level Rise Work Group recommended a review of the projection four years after its release in 2011.

In September 2014, the Sea Level Rise Work Group was reconvened for the purpose of updating the unified regional projection based on projections and scientific literature released since 2011. This report released in October 2015 contains a summary of the projections and publications reviewed and discussed, the methodology for deriving the projection, the recommended unified regional projection and additional recommendations from the Sea Level Rise Work Group.

PROJECTION AND SUMMARY

This Unified Sea Level Rise projection for Southeast Florida updated in 2015 projects the anticipated range of sea level rise for the region from 1992 to 2100 (Figure 1). The projection highlights three planning horizons:

1) short term, by 2030, sea level is projected to rise 6 to 10 inches above 1992 mean sea level,

2) medium term, by 2060, sea level is projected to rise 14 to 34 inches above 1992 mean sea level,

3) long term, by 2100, sea level is projected to rise 31 to 81 inches above 1992 mean sea level.

Projected sea level rise in the medium and long term has a significant range of variation as a result of uncertainty in future greenhouse gas emissions and their geophysical effects, the incomplete quantitative understanding of all geophysical processes affecting the rate of sea level rise in climate models and current limitations of climate models to predict the future. As such, the Work Group recommends that the unified sea level rise projection include three global mean sea level rise curves regionally adapted to account for the acceleration of sea level change observed in South Florida. The titles of the global mean sea level rise curves were retained for simplicity of referencing source but the curves have been adjusted from the global projections to reflect observed local change. The projection consists of the NOAA High Curve, the USACE High Curve (also known as the NOAA Intermediate- High) and the median of the IPCC AR5 RCP8.5 scenario, with specific guidance as to how and when they should be used in planning.

- The lower boundary of the projection (blue dashed line) can be applied in designing low risk projects that are easily replaceable with short design lives, are adaptable and have limited interdependencies with other infrastructure or services.
- The shaded zone between the IPCC AR5 RCP8.5 median curve and the USACE High is recommended to be generally applied to most projects within a short -term planning horizon. It reflects what the Work Group projects will be the most likely range of sea level rise for the remainder of the 21st Century.
- The upper curve of the projection should be utilized for planning of high risk projects to be constructed after 2060 or projects which are not easily replaceable or removable, have a long design life (more than 50 years) or are critically interdependent with other infrastructure or services.

Unified Sea Level Rise Projection
(Southeast Florida Regional Climate Change Compact, 2015)

Year	IPCC AR5 Median (inches)	USACE High (inches)	NOAA High (inches)
2030	6	10	12
2060	14	26	34
2100	31	61	81

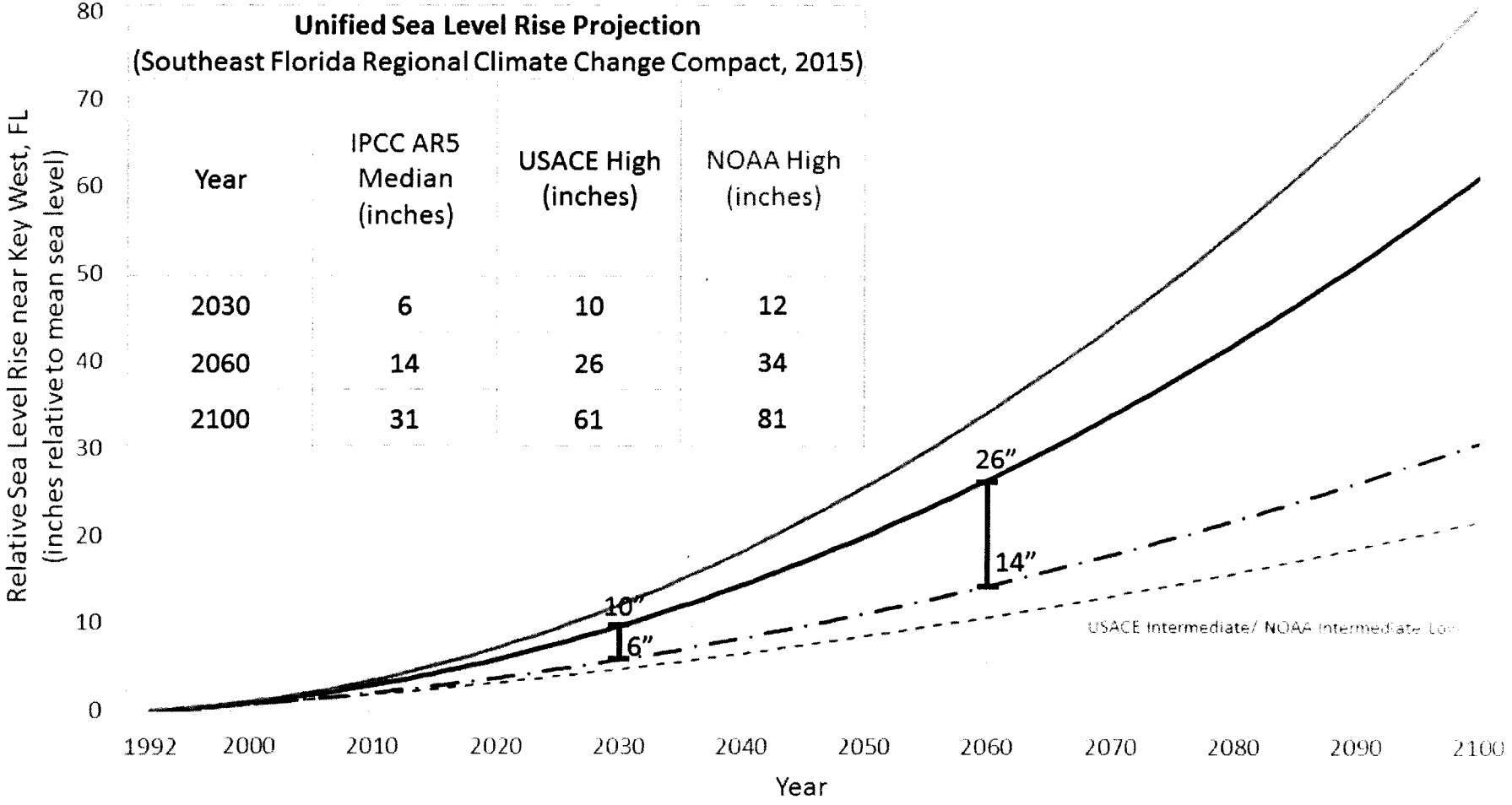


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Figure 1: Unified Sea Level Rise Projection. These projections are referenced to mean sea level at the Key West tide gauge. The projection includes three global curves adapted for regional application: the median of the IPCC AR5 RCP8.5 scenario as the lowest boundary (blue dashed curve), the USACE High curve as the upper boundary for the short term for use until 2060 (solid blue line), and the NOAA High curve as the uppermost boundary for medium and long term use (orange solid curve). The incorporated table lists the projection values at years 2030, 2060 and 2100. The USACE Intermediate or NOAA Intermediate Low curve is displayed on the figure for reference (green dashed curve). This scenario would require significant reductions in greenhouse gas emissions in order to be plausible and does not reflect current emissions trends.

PROJECTION UPDATE

The key components of the methodology used to develop the unified sea level rise projection are as follows:

- *Planning Horizon of 2100:* In response to the release of climate scenarios extending to year 2100 from the Intergovernmental Panel on Climate Change (IPCC), projections through year 2100 by federal agencies including the US Army Corps of Engineers (USACE) and the National Oceanographic and Atmospheric Administration (NOAA) and the need for planning for infrastructure with design lives greater than 50 years, the unified sea level rise projection time scale has been extended to 2100.

- *Starting in 1992*: The year 1992 has been selected as the initial year of the projection because it is the center of the current mean sea level National Tidal Datum Epoch of 1983-2001. A tidal datum epoch is a 19 year period adopted by the National Ocean Service as the official time segment over which tide observations are used to establish tidal datums such as mean sea level, mean high water etc. The National Tidal Datum Epoch is revised every 20-25 years to account for changing sea levels and land elevations.

- *Tide gauge selection:* The Key West gauge (NOAA Station ID 8724580) was maintained as the reference gauge for calculation of the regional projection as was used in the original projection. In addition, appropriate conversion calculations are provided in Section 4: Guidance for Application in order to reference the projection to the Miami Beach gauge (NOAA Station ID 8723170) or the Lake Worth Pier gauge (NOAA Station ID 8722670). The Key West gauge has recorded tidal elevations since 1913. Tidal records from Miami Beach and Lake Worth Pier are available since 2003 and 1996, respectively.

- *Review of existing projections:* Global projections released since 2011 were reviewed and considered for interpretation for the unified sea level rise projection including those developed by USACE (2011; 2013), NOAA (Parris et al., 2012), IPCC (IPCC, 2013), Bamber and Aspinall (2013), Horton et al. (2014), Jevrejeva et al. (2014), and Kopp et al. (2014). Review criteria included comprehensiveness of datasets and models used to develop the projections, standing in the scientific community, and applicability to the Southeast Florida region.

Summaries of the existing global projections are included below:

- *USACE Guidance: There was no update to the projections since 2011 (USACE, 2011). The range of global mean sea level change projected by USACE was approximately 0.2 to 0.6 meters (9 to 25 inches) by 2060 and 0.5 to 1.5 meters (20 to 59 inches) by 2100. Existing guidance and the online USACE Sea Level Change Calculator were used to adapt the global mean sea level change curves for the unified South Florida projection.*
- *IPCC AR5 Projections: The 5th Assessment Report (AR5) included four scenarios based on predicted greenhouse gas concentration trajectories (Regional Concentration Pathways, RCPs). The global mean sea level change projected in these scenarios ranged from 0.17 to 0.38 meters (7 to 15 inches) by years 2046 to 2065 and 0.26 to 0.82 meters (10 to 32 inches) by 2081 to 2100.*
- *NOAA Projections produced for the National Climate Assessment (NCA): For the 2014 NCA, four global mean sea level rise scenarios were defined in a manner allowing the user to select the appropriate curve based on risk of concern, uncertainty tolerance and type of application. The global mean sea level rise projected in these scenarios ranges from 0.2 meters to 2 meters (8 to 80 inches) by 2100.*
- *Recent Probabilistic Projections: Recently, several authors have quantitatively and qualitatively approached determining the likelihood or percent chance that the global mean sea level rise projections will occur by 2100. For example, based on a probability density function, Jevrejeva et al. (2014) concluded that there is only a 5% chance global mean sea level rise will be larger than 1.8 meters (71 inches) by 2100. Using an alternate method, Kopp et al. (2014) concluded there is only a 5% chance global mean sea level rise will be larger than 1.76 meters (69 inches). These studies represent examples of possible methods of further explaining applicability of projections for future use.*
- *Science Community Polling: Several polls have been conducted amongst groups within the scientific community to understand the experts' opinions on the level of uncertainty associated with existing global mean sea level rise projections. These surveys have yielded reported likely ranges of global mean sea level rise of 0.4 to 1.2 m (16 to 42 inches) depending on warming scenarios (Horton et al., 2014) and 0.29 m to 0.84 m (11 to 33 inches) (Bamber and Aspinall, 2013) by 2100.*

Projection confidence: The understanding of past sea level changes has improved since the Work Group's last review due to additional observations and analyses of processes driving thermal expansion, loss of ice from ice sheets and glaciers and terrestrial water storage by the scientific community. Despite this improved understanding, the development of complex climate models is evolutionary and many processes and responses are yet to be incorporated. The numerous ice melt accelerating feedbacks not in the models are especially of concern as they are speeding up ice melt and sea level rise well beyond model projections. Models do continue to offer useful approximations of trends and order of magnitude of rates of change and acceleration based on climate data input and are suitable for determining projected future ranges for planning and design efforts. Additionally, as noted in Parris et al. (2012), the quadratic curves comprising the projection were selected by the some of the scientific community for simplicity. Sea level will not rise in the smooth manner illustrated by the quadratic curves but, may be punctuated by faster and slower rates (Parris et al., 2013).

GUIDANCE FOR APPLICATION

INCREASE IN RECURRENT FLOODING AND REDUCED DRAINAGE CAPACITY

Recent analyses of tide gauge records acquired along the US Atlantic coast indicate a rapid acceleration in the rate of sea level rise since 2000, which was attributed to possible slowing down of the Atlantic Meridional Overturning Circulation (AMOC) (Ezer et al., 2013; Sallenger et al., 2012; Yin et al., 2009). The higher sea level resulted in increasing flooding frequency in several coastal communities, e.g., Boston, Norfolk, and Miami Beach (Ezer et al., 2013; Kirshen et al., 2008; Kleinosky et al., 2007; Wdowinski et al., 2015). These frequent flood events, often termed "nuisance flooding", occur mainly due to heavy rain during high tide conditions but sometimes occur due to high tide alone and are termed "King tides", "lunar flooding" or "sunny sky flooding". Recently, Ezer and Atkinson (2014) used tide gauge data to calculate accumulated flooding time in twelve locations along the Atlantic coast and showed a significant increase in flooding duration over the past twenty years. They suggested that flood duration is a reliable indicator for the accelerating rate of sea level rise, which is often difficult to estimate on a regional-scale.

On the national scale, NOAA (2014) published an assessment of nuisance flooding finding that the duration and frequency of these events are intensifying around the United States. Subsequently, Sweet and Park (2014) demonstrated that coastal areas are experiencing an increased frequency of flood events (an acceleration) over the last few decades, and that this acceleration in flood occurrence will continue regardless of the specific rate of sea level rise.

A detailed analysis of nuisance flooding occurrence in Miami Beach was conducted by Wdowinski et al. (2015), who used a variety of data sources (tide gauge, rain gauge, media reports, insurance claims, and photo records) from the past 16 years (1998-2013). They found that most flooding events occur after heavy rain (> 80 mm, 3 inches) during high tide conditions, but also after the fall equinox tides regardless of rain events. An analysis of flooding frequency over the past 16 years revealed that since 2006, rain-induced events increased by 33% and tide-induced events quadrupled, from 2 events during 1998-2005 to 8-16 events in 2006-2013. Wdowinski et al. (2015) also analyzed the nearby Virginia Key tide gauge record and found a significant acceleration in the rate of sea level rise since 2006. The average rate of regional sea level rise since 2006 is 9±4 mm/yr, significantly higher than the global average rate of 2.8±0.4 mm/yr estimated from in-situ data (Church and White, 2011). Although the Work Group notes that continued analysis of changes in trends over time is necessary to determine long-term significance of this recently observed uptrend, studies have already begun to correlate the regional sea level rise to the slowing down of the Gulfstream. A comparison between sea level variations near Miami with high-resolution global climate model simulations (Kirtman et al., 2012) revealed a strong correlation between increasing sea level rise in the Miami area and a

weakening of the Florida Current-Gulf Stream system. This finding confirmed concurs with other studies that relate sea level rise acceleration along the US Atlantic coast with weakening of the Gulf Stream (e.g., Ezer et al., 2013; Park and Sweet, 2015).

STORM SURGE AND SEA LEVEL RISE

Storm surge and sea level rise are independent coastal processes that when occurring simultaneously lead to compounded impacts. Sea level rise will increase the inland areal extent inundated by surges, the depth of flooding and power of the surge and the extent and intensity of damage associated with storm surge and waves. As a result, severe storms of the future will cause more damage than storms of equal intensity occurring at today's sea level. Tebaldi et al. (2012) estimate a 100-year magnitude surge flooding (by today's standards) will begin to occur every 20 years at the projected mean sea level in 2050. Regional hazard mapping does not yet include the combined effects of sea level rise and surge but the impacts are anticipated to be significant.

Historically, the sea level extremes have increased along with the increase in mean sea level at locations along the coasts. Using this as the basis, one can relate the sea level extremes to mean sea level which allows the determination of future extremes and return periods (Obeysekera and Park, 2013). Another approach is to use the non-tidal residuals (component of storm surge and waves above the tidal variations), NTR, and determine their probabilistic characteristics. Assuming future sea level rise scenarios and the tidal variations, one can then superimpose extreme storm surge of NTR for a given return period to determine total sea level extreme for a given time epoch in the future. Return period for a given scenario can be determined using methods outlined in Salas and Obeysekera (2014). Both approaches assume there is no change in future "storminesss" although with higher sea levels, magnitude of storm surge may change at some locations along the coasts.

NATURAL RESOURCE DEGRADATION

As sea level rise increasingly inundates coastal areas, there is the potential for degradation of natural resources and loss of their services to the surrounding environment. Ecosystems will transition either by retreat and migration, adaptation, or elimination of functions and certain species. Shallow water habitats may transition to open water, forcing ecological changes in coastal wetlands and estuaries affecting nesting, spawning and feeding locations and behavior. Intrusion of saltwater inland, into inland water bodies and within the aquifer is negatively impacting freshwater resources, and these impacts will worsen or accelerate with further sea level rise. Inundation of shorelines will increase the extent and severity of beach erosion and

previously stable coastal areas. In combination, these impacts will cascade throughout the region's ecosystems even if they are not immediately adjacent to open water areas.

Natural infrastructure is critical to the resilience of the urban environment, in that it provides many benefits related to storm protection, water and air purification, moderating urban heat effects, and socio-economics. South Florida's tourist economy is heavily dependent on these natural resources. The region must prioritize providing space for habitat transitions and focus on reducing anthropogenic pressures that would compound the degrading effects of sea level rise.

GUIDANCE IN APPLYING THE PROJECTIONS

AUDIENCES

The Unified Sea Level Rise Projection for Southeast Florida is intended to be used for planning purposes by a variety of audiences and disciplines when considering sea level rise in reference to both short and long-term planning horizons as well as infrastructure siting and design in the Southeast Florida area. Potential audiences for the projections include, but are not limited to, elected officials, urban planners, architects, engineers, developers, resource managers and public works professionals.

One of the key values of the projection is the ability to associate specific sea level rise scenarios with timelines. When used in conjunction with vulnerability assessments, these projections inform the user of the potential magnitude and extent of sea level rise impact at a general timeframe in the future. The blue shaded portion of the projection provides a likely range for sea level rise values at specific planning horizons. Providing a range instead of a single value may present a challenge to users such as engineers who are looking to provide a design with precise specifications. Public works professionals and urban planners need to work with the engineers and with policy makers to apply the projection to each project based on the nature, value, interconnectedness, and life cycle of the infrastructure proposed.

Finally, elected officials should use the projections to inform decision making related to issues such as adaptation policies, budget impacts associated with design features which address planning for future sea level rise, capital improvement project needs especially those associated with drainage and shoreline protection, and land use decisions.

APPLYING PROJECTION CURVES TO INFRASTRUCTURE SITING AND DESIGN

When determining how to apply the projection curves, the user needs to consider the nature, value, interconnectedness, and life cycle of the existing or proposed infrastructure. The blue

shaded portion of the projection can be applied to most infrastructure projects, especially those with a design life expectancy of less than 50 years. The designer of a type of infrastructure that is easily replaced, has a short lifespan, is adaptable, and has limited interdependencies with other infrastructure or services must weigh the potential benefit of designing for the upper blue line with the additional costs. Should the designer opt for specifying the lower curve, she/he must consider the consequences of under-designing for the potential likely sea level condition. Such consequences may include premature infrastructure failure. Additionally, planning for adaptation should be initiated in the conceptual phase. A determination must be made on whether or not threats can be addressed mid-life cycle via incremental adaptation measures, such as raising the height of a sluice gate on a drainage canal..

Forward thinking risk management is critical to avoiding loss of service, loss of asset value and most importantly loss of life or irrecoverable resources. An understanding of the risks that critical infrastructure will be exposed to throughout its life cycle such as sea level rise inundation, storm surge and nuisance flooding must be established early on in the conceptual phase. If incremental adaptation is not possible for the infrastructure proposed and inundation is likely, designing to accommodate the projected sea level rise at conception or selection of an alternate site should be considered. Projects in need of a greater factor of safety related to potential inundation should consider designing for the upper limit of the blue-shaded zone. Examples of such projects may include evacuation routes planned for reconstruction, communications and energy infrastructure and critical government and financial facilities.

Due to the community's fundamental reliance on major infrastructure, existing and proposed critical infrastructure should be evaluated using the upper curve of the projection, the orange curve (Figure 1, NOAA High). Critical projects include those or projects which are not easily replaceable or removable, have a long design life (more than 50 years), or are interdependent with other infrastructure or services. If failure of the critical infrastructure would have catastrophic impacts, it is considered to be high risk. Due of the community's critical reliance on major infrastructure, existing and proposed high risk infrastructure should be evaluated using the upper curve of the projection, the orange curve (Figure 1, NOAA High). Examples of high risk critical infrastructure include nuclear power plants, wastewater treatment facilities, levees or impoundments, bridges along major evacuation routes, airports, seaports, railroads, and major highways.

For low risk infrastructure projects, the lowermost curve of the projection (Figure 1, IPCC AR5 RCP8.5 curve) may be applied. Low risk projects include infrastructure expected to be constructed and then replaced within the next 10 years, projects that are easily replaceable and

adaptable or projects with limited interdependencies and limited impacts when failure occurs. An example of such a project may be a small culvert in an isolated area.

Additionally, planning for adaptation should be initiated in the conceptual phase. A determination must be made on whether or not risk can be addressed mid-life cycle via incremental. If incremental adaptation is not possible for the type of high risk infrastructure proposed and inundation is likely, designing to accommodate the projected sea level rise at conception or selection of an alternate site should be considered. To ensure an appropriately conservative design approach is used, the upper limit of the projection (Figure 1, NOAA High) should be used for projects with design lives of more than 50 years.

AVAILABLE VULNERABILITY ASSESSMENTS

The Southeast Florida Regional Climate Change Compact and the individual Compact Counties have developed region-wide and county-wide sea level rise inundation vulnerability assessments available for public use (Compact, 2012). These assessments spatially delineate areas of inundation correlating to 1 foot, 2 feet and 3 feet of sea level rise. In addition, the Compact website hosts a multitude of sources of information, tools and links in support of adaptation and mitigation planning for use by the Compact communities.

SUMMARY

The Work Group recommends the use of the NOAA High Curve, the USACE High Curve (USACE, 2015) and the median of the IPCC AR5 RCP8.5 scenario (IPCC, 2013) as the basis for a Southeast Florida sea level rise projection for the 2030, 2060 and 2100 planning horizons. In the short term, sea level rise is projected to be 6 to 10 inches by 2030 and 14 to 26 inches by 2060 (above the 1992 mean sea level). Sea level has risen 3 inches from 1992 to 2015. In the long term, sea level rise is projected to be 31 to 61 inches by 2100. For critical infrastructure projects with design lives in excess of 50 years, use of the upper curve is recommended with planning values of 34 inches in 2060 and 81 inches in 2100. Sea level will continue to rise even if global mitigation efforts to reduce greenhouse gas emissions are successful at stabilizing or reducing atmospheric CO_2 concentrations; however, emissions mitigation is essential to moderate the severity of potential impacts in the future. A substantial increase in sea level rise within this century is likely and may occur in rapid pulses rather than gradually.

The recommended projection provides guidance for the Compact Counties and their partners to initiate planning to address the potential impacts of sea level rise on the region. The shorter term planning horizons (through 2060) are critical to implementation of the Southeast Florida Regional

Climate Change Action Plan, to optimize the remaining economic life of existing infrastructure and to begin to consider adaptation strategies. As scientists develop a better understanding of the factors and reinforcing feedback mechanisms impacting sea level rise, the Southeast Florida community will need to adjust the projections accordingly and adapt to the changing conditions. To ensure public safety and economic viability in the long run, strategic policy decisions will be needed to develop guidelines to direct future public and private investments to areas less vulnerable to future sea level rise impacts.

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SOUTHEAST FLORIDA CLIMATE CHANGE

MIAMI-DADE

BROWARD COUNTY FLORIDA

PALM BEACH COUNTY FLORIDA

APPENDIX A: STAND ALONE GUIDANCE DOCUMENT AND PROJECTION

The Southeast Florida Regional Climate Change Compact's 2015 Unified Sea Level Rise Projection is presented below showing the anticipated range of sea level rise for the region from 1992 to 2100 (Figure 1). The projection highlights three planning horizons:

1) Short term, by 2030, sea level rise is projected to be 6 to 10 inches above 1992 mean sea level;

2) Medium term, by 2060, sea level rise is projected to be 14 to 26 inches above 1992 mean sea level with the less likely possibility of extending to 34 inches;

3) Long term, by 2100, sea level rise is projected to be 31 to 61 inches above 1992 mean sea level with the less likely possibility of extending to 81 inches.

The Unified Sea Level Rise Projection for Southeast Florida include three curves, named after the global sea level rise curves from which they were derived: the NOAA High Curve (orange solid), the USACE High Curve (blue solid) and the median of the IPCC AR5 scenario (blue dashed). The blue shaded area represents the *likely* range of sea level rise for our region. The orange curve represents a condition that is possible but less likely. The USACE Intermediate or NOAA Intermediate Low curve is displayed on the figure for reference (green dashed curve). This scenario would require significant reductions in greenhouse gas emissions in order to be plausible and does not reflect the impact on sea level from the current emissions trends.

When determining how to apply the projection curves, the user needs to consider the nature, value, interconnectedness, and life cycle of the infrastructure in question. The following guidance is provided for using the projection.

- The shaded zone between the IPCC AR5 median curve and the USACE High is recommended to be generally applied to most projects within a short to long-term planning horizon, especially those with a design life expectancy of less than 50 years. The designer of a type of infrastructure that is easily replaced, has a short lifespan, is adaptable, and has limited interdependencies with other infrastructure or services must weigh the potential benefit of designing for the upper blue line with the additional costs. Should the designer opt for specifying the lower curve, he must consider the consequences of under designing for the potential likely condition.
- The uppermost boundary of the projection (orange curve) should be utilized for planning of critical infrastructure to be constructed after 2060 or projects with a long design life (more than 50 years) as a conservative estimate of potential sea level rise. Critical projects include those which are not easily replaceable or removable, have a long design life (more than 50 years), or are interdependent with other infrastructure or services. If failure of the infrastructure would have catastrophic impacts on the economy, community or environment, it should be considered critical.

To reference the projection to the current year i.e. 2015, simply subtract the values listed in the table below from the projected sea level rise. For example, based on the projection, sea level rise in 2030 will be 6 to 10 inches above 1992 mean sea level. In order to determine how much rise will occur relative to the current year, 2015, the values listed in the table below for the IPCC AR5 median and USACE High curves can be subtracted from the projected range i.e. 6-3=3 inches for the lower end of the range and 10-4.3=5.6 inches for the upper end of the range, respectively. The projection can be restated as such: sea level will rise 3 to 5.6 inches from this year (2015) to 2030.

Current Year	IPCC AR5 Median (Blue Dashed Line)	USACE High (Blue Solid Line)	NOAA High (Orange Line)
2015	3	4.3	5.3
2016	3.1	4.7	5.6
2017	3.4	4.9	6
2018	3.5	5.3	6.4
2019	3.7	5.5	6.8

To convert local relative sea level rise datum from mean sea level to a topographic reference point used in surveying land elevations (NAVD 88), add the number listed in the table below to projected sea level rise:

	To convert relative sea level rise datum from mean sea level to feet NAVD 88*, add the number below to value from projection	To convert relative sea level rise datum from mean sea level to inches NAVD 88, add the number below to value from projection	Mean High Water (MHW)	Mean Low Water (MLW)
Key West	-0.87	-10.4	-5.6	-14.2
Vaca Key	-0.83	-10	-5.6	-14.2
Miami Beach	-0.96	-11.5	3.0	-26.5
Lake Worth Pier	-0.95	-11.4	4.9	-27.8

*North American Vertical Datum of 1988 (NAVD 88) is the topographic reference point used in surveying land elevations. By definition it is the vertical control datum of orthometric height established for vertical control surveying in the United States of America based upon the General Adjustment of the North American Datum of 1988.

Alternatively, the USACE Sea Level Change Curve Calculator (Version 2018.88) (USACE, 2015) found at this website http://www.corpsclimate.us/ccaceslcurves.cfm can be used to change datums, reference years and tide gauge locations. The projection curves were generated using this tool.

The equations used for the curves comprising the unified sea level rise projection are as follows:

- NOAA High Curve (Parris, 2012) and USACE High Curve (USACE, 2013):

$$E(t_2) - E(t_1) = a(t_2 - t_1) + b(t_2^2 - t_1^2)$$

where $E(t_2) - E(t_1)$ = Eustatic sea level change (m) with reference year of 1992;

t_1 = difference in time between current year or construction date and 1992 e.g. 2015-1992 = 23 years;

t_2 = difference in time between future date of interest and 1992 i.e. 2060-1992 = 68 years;

where a is a constant equal to 0.0017 mm/yr, representing the rate of global mean sea level change,

and b is a variabe equal to $1.56x10^{-4}$ for the NOAA High Curve; $1.13x10^{-4}$ for the USACE high curve, representing the acceleration of sea level change.

- IPCC AR5 RCP8.5 Median Curve (IPCC, 2013):

$$E(t_2) - E(t_1) = 0.0017(t_2 - t_1) + (4.684499x10^{-5})(t_2^2 - t_1^2)$$

- The NOAA Intermediate Low/ USACE Low curve that is not part of the projection but included on the graph for reference (green dashed line) can be derived as follows:

$$E(t_2) - E(t_1) = 0.0017(t_2 - t_1) + (2.71262x10^{-5})(t_2^2 - t_1^2)$$

The equations above are global mean sea level rise projections. In order to adapt the curves for regional use, the average rate of mean sea level rise or "a" value is adjusted. For example, to reference the above equations to the Key West tide gauge, a equals 0.0022 mm/yr.

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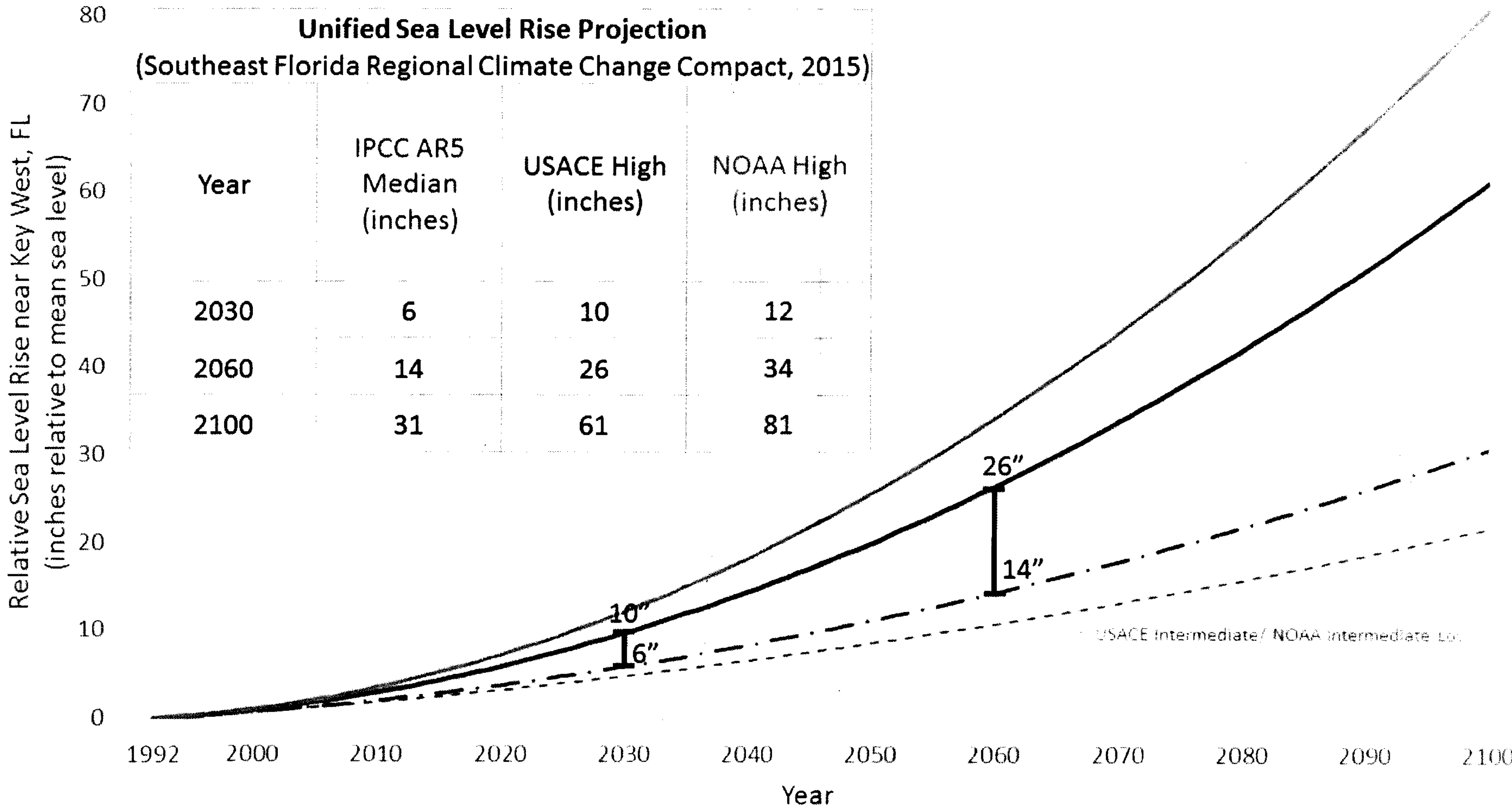

Year	IPCC AR5 Median (inches)	USACE High (inches)	NOAA High (inches)
2030	6	10	12
2060	14	26	34
2100	31	61	81

Figure A-1: Unified Sea Level Rise Projection. These projections are referenced to mean sea level at the Key West tide gauge. The projection includes three global curves adapted for regional application: the median of the IPCC AR5 scenario as the lowest boundary (blue dashed curve), the USACE High curve as the upper boundary for the short term for use until 2060 (solid blue line), and the NOAA High curve as the uppermost boundary for medium and long term use (orange solid curve). The incorporated table lists the projection values at years 2030, 2060 and 2100. The USACE Intermediate or NOAA Intermediate Low curve is displayed on the figure for reference (green dashed curve). This scenario would require significant reductions in greenhouse gas emissions in order to be plausible and does not reflect current emissions trends.

ACCELERATION OF SEA LEVEL RISE

A statistically significant acceleration of sea level rise has been documented in the latter half of the 20th century continuing through recent years (Church and White, 2011; Calafat and Chambers, 2013; Hay et al. 2015; IPCC, 2013; Watson et al., 2015). Hay et al. (2015) reported the global sea level rise rate from 1901 to 1990 to be 1.2 +/- 0.2 mm/yr (a value which had been overestimated in previous studies). Since 1993, an increase in the average global mean sea level rise rate has been observed (Hay et al., 2015; Watson et al., 2015). Watson et al. (2015) has most recently reported the average global mean sea level rise rate to be more than double the rate of the previous century, indicating an acceleration; the observed rate was 2.6+0.4 mm/yr from 1993 to 2015 with an acceleration of 0.04 mm/yr^2. This acceleration indicates sea level will rise more rapidly in the future than it has historically. The global and regional processes driving sea level rise and its acceleration are discussed in the following sections.

FACTORS INFLUENCING SEA LEVEL RISE

GLOBAL PROCESSES

In 2011, the Work Group noted studies describing a variety of reinforcing (positive) feedbacks that are accelerating ice sheet melt in Greenland and Antarctica and also accelerating Arctic pack ice melt, permafrost thaw and organic decay, and methane hydrate release from the warming Siberian Shelf, in addition to other global processes affecting sea level rise i.e. increasing greenhouse gas concentrations, changes in volcanic forcing and tropospheric aerosol loading (Compact, 2011). Since then, numerous additional reinforcing feedbacks have been documented and previously recognized feedbacks have intensified.

ACCELERATION OF ICE MELT

Accelerated melting of the ice sheets on Greenland and Antarctica (Rignot et al., 2011; Talpe et al., 2014) is expected to be the predominant factor affecting sea level rise acceleration during the 21st Century. Melting is caused by increasing temperatures and warming of the atmosphere, warm currents moving along the coast of Greenland, and warm ocean water moving under and up into ice sheets through deep outlet glacial fjords in Antarctica. Recent observations have indicated ice sheets are more vulnerable to melting than previously realized due to the extent of deep valleys within the ice sheets connecting warmer ocean water to the internal areas of the ice sheets thus causing rapid melting and peripheral thinning (Jenkins et al., 2010; Jacobs et al., 2011; Morlighem et al., 2014; Rignot et al., 2014; Greenbaum et al., 2015). Accelerated melting results in large discharges of fresh water which raises the local sea level near the ice sheets (8

inches around Antarctica over past 20 years) (Rye et al., 2014). This release of freshwater has resulted in a seasonal increase in the amount of sea ice in the Antarctic (Bintanja et al., 2013; Rye et al., 2014) and slower circulation of North Atlantic surface water, also known as Atlantic Meridional Overturning Circulation (Rahmstorf et al., 2015). The slowdown in circulation may contribute to increased local sea level rise along the Florida coast, as discussed in the ***Regional/ Local Processes*** section. The IPCC projections do not include the factors related to acceleration of ice melting processes described above, and as a result are likely an underestimate of future sea level rise (Rignot et al., 2011).

ICE SHEET DISINTEGRATION

Indicators of ice sheet disintegration include retreat of the ice sheet's outer boundary and rapid thinning. Lateral flow of the Greenland Ice Sheet margin, the outer boundary, has dramatically accelerated in the past two decades in response to surface melt waters penetrating fractures in the ice and warming and softening the ice (Bell et al., 2014). In addition to retreat, the ice sheets have initiated a rapid thinning process due to basal melt (Pritchard et al., 2012), signaling the initiation of prolonged ice sheet degradation based on historic analysis (Johnson et al., 2014). Joughin et al. (2011) have used numerical models to look at the sensitivity of the outlet glaciers of the West Antarctic Ice Sheet to ocean water melt and have concluded that the West Antarctic Ice Sheet collapse is already underway; the extent of the collapse in the future is not yet known. As part of the Gravity Recovery and Climate Experiment (GRACE) satellite monitoring program, ice sheet mass loss has been quantified as 280±58 gigatons per year (Gt/yr) from Greenland and up to 180±10 Gt/yr in Antarctica (Velicogna et al., 2014). As a reference for the magnitude of a gigaton, one could estimate one gigaton to equal the mass of over one hundred million elephants. In addition, significant recent work was completed to verify the estimated contribution of ice sheet disintegration to sea level rise using satellite data (Jacob et al., 2012; King et al., 2012; Gardner et al., 2013) with the conclusion that ice sheet melt accounted for 29±13% of sea level rise from 2003 to 2009 (Gardner, 2013). In order to further refine the estimates and projections of the magnitude of ice sheet degradation and their contribution to sea level rise, the complex dynamics driving ice sheet melt need to be better understood, in particular the mechanisms driving interactions between ice sheets and warm currents.

WARM CURRENTS

In 2011, the Work Group acknowledged the effects of warm ocean water currents accelerating summer pack ice melt and causing melting beneath the outlet glaciers. Recent work has further clarified the compounding mechanisms driving the flow and temperature changes of warm currents. Spence et al. (2014) analyzed the poleward shift in direction of the southern hemisphere westerly winds since the 1950's and simulated the intense warming of coastal waters

associated with such a shift in order to explain and forecast the significant temperature increase in ocean waters interacting with the base of ice sheets and floating ice shelves. This study serves to validate the projection of the persistence of this wind trend and the resulting melting due to warm current interaction. Separate from wind forcing, an increase in ocean surface stress due to thinning of the formerly consolidated sea-ice cover near Antarctica is proposed to result in a redirection of warm ocean currents into submarine glacial troughs and further expediting melting of the deep ice-shelf base based on ocean-ice modeling (Hellmer et al., 2012). Ice sheet melt as a result of interaction with warm currents is one of the dominant factors contributing to recent global sea level rise (IPCC, 2013); however, as discussed in the next section, land based contributions to global warming may further exacerbate sea level rise in the future.

THAWING PERMAFROST

The potential for significant additional emissions of carbon dioxide and methane from thawing permafrost and the rate of occurrence continues to be investigated. The intricate feedback mechanisms associated with permafrost are not well understood; as such, the IPCC did not include permafrost thaw in its projections (Collins et al., 2013). This deficiency was criticized publicly due to the theorized potential for permafrost carbon emissions to exceed emissions from fossil fuel use. Schuur et al. 2013 conducted a survey of experts to quantify permafrost change in response to four global warming scenarios and found despite risk for significant contributions of emissions from thawing, fossil fuel combustion was likely to remain the main source of emissions and climate forcing until 2100 based on the proposed warming scenarios.

Following the release of the IPCC (2013) report, demand for research to understand the dynamics of the physical and chemical permafrost processes has increased in order to confirm the estimates of emissions from thawing. As an initial step, the occurrence of significant submarine permafrost thawing was confirmed by Overduin et al. (2014) when 8 to 10°C of warming within the permafrost layer was observed in less than 1,000 years, resulting in a degradation of ice-bearing permafrost at the rate of 3 cm/yr. In addition, seawater seeping through soil pores was identified as the source of sulfate necessary to oxidize methane in the upper layer of the thawing permafrost. Although site specific, studies such as Overduin et al. (2014) will begin to provide the information necessary to incorporate permafrost thawing into models and projections in the near future.

REGIONAL/ LOCAL PROCESSES

VERTICAL LAND MOVEMENT

Vertical earth movements, which regionally and locally modify the globally averaged rate of sea level change, result in a relative rate of change that varies from one location to another. These

land motions have been inferred from historical tide data and geodesic measurements. When added to projected rates of global mean sea level rise, they result in a perceived change ranging from increased rise in regions of subsidence (e.g., New Orleans) to falling sea levels where the land is being uplifted (e.g., along the northern border of the Gulf of Alaska). Other regions are geologically stable and have only small differences with respect to the global rate of change. In South Florida, in general, coastal land elevations are considered to be relatively stable meaning that the land is not experiencing significant uplift nor subsidence. It is also important to note, the vertical land movement that is occurring is non-uniform across South Florida and movement measured at specific monitoring stations sites may not reflect vertical land movement in adjacent areas.

The Continuously Operating Reference (COR) network of permanent Global Positioning System (GPS) receivers provides precise measurements of vertical land movement in four locations throughout Southeast Florida (Key West, Virginia Key, Pompano Beach, and Palm Beach) over periods of nine to eleven years. Additional continuous GPS measurements have been acquired in eight other sites in the region over various time periods (two to eleven years). Precise analysis of these data reveals negligible vertical movements at most stations (less than 1 mm/yr) (Snay et al., 2007; Santamaría-Gómez et al., 2012; NGL, 2015). However, some stations show 1 to 6 mm/yr of subsidence, reflecting mostly local unstable conditions of the GPS antenna monument (e.g., local building movements) (e.g., Bock et al., 2012).

National Geodetic Survey has operated continuous GPS stations at Key West, Fort Lauderdale, Miami and Palm Beach Gardens. The GPS data of these sites were processed by the Nevada Geodetic Laboratory, who presents the results at GPS time series (http://geodesy.unr.edu/index.php). The rates of vertical land movement at these stations are shown in Table 1 (Blewitt et al., 2015). It should be noted vertical land movement is non-uniform across South Florida as a result of geology variations and the non-uniform compaction of fill placed during development of the region. Subsidence at tide stations is closely monitored to ensure the accuracy of sea level rise measurements. The regional rate of sea level rise is affected by such localized subsidence and is accounted for in the regional sea level rise acceleration variable incorporated in the projections adapted for the region.

Table 1: Continuous GPS Operation in Southeast Florida (Blewitt et al., 2015)

Site	Location	Duration	Vertical rate (mm/yr)
KYW1	Boca Chica Key	1997-2008	-0.5 ± 0.1
KYW5	Boca Chica Key	2007-present	0.1 ± 0.1
KYW6	Boca Chica Key	2007-present	1.0 ± 0.1 (uplift)
KWST	Key West airport	2003-present	-1.5 ± 0.1
CHIN	Key West, 500 m south of tide gauge	2008-presnt	-1.6 ± 0.5
LAUD	Fort Lauderdale Executive Airport	2005-2014; 2014-2015	-0.5± 1.1
ZMA1	Miami Airport	2004-2008; 2008-present	0.2± 0.9
FLC6	Florida City	2009-present	-1.8± 1.2
PBCH	North Palm Beach County Airport	2005-present	1.0± 1.0 (uplift)

Additionally, in some regions, the effects of changing ocean currents can further modify the relative local rate of sea level rise. Such is the case of the east coast of Florida, as is discussed in the next section, **Ocean Dynamics, Gulfstream/ Circulation**

OCEAN DYNAMICS, GULFSTREAM/ CIRCULATION

Ocean circulation has changed little during the current period of scientific observation, but in the future it can considerably alter the relative rate of sea level rise in some regions, including Southeast Florida. A slowing of the Florida Current and Gulf Stream will result in a more rapid sea level rise along the east coast of North America. By 2100, these circulation changes could contribute an extra 8 inches of sea level rise in New York and 3 inches in Miami according to Yin et al. (2009). Most of the global climate models used by the IPCC (IPCC, 2007; 2013) project a 20-30% weakening of the Atlantic Meridional Overturning Circulation (AMOC), of which the Gulf Stream and Florida Current are a part. Measurements of the AMOC have yet to conclusively detect the beginning of this change, however there has been a report of a recent decline in AMOC strength by Smeed et al. (2014) that coincides with the mid-Atlantic hotspot of sea level rise reported by Ezer et al. (2013) and Rahmstorf et al. (2015). Recent analysis of the Florida Current transport has detected a decrease in circulation over the last decade, which appears to account

for 60% of South Florida sea level rise over the decade and contribute to a positive acceleration (Park and Sweet, 2015). If a long-term slowdown of the AMOC and Florida Current. Rahmstorf et al. (2015) use a proxy method also suggesting that a slowdown of the AMOC has begun. If a long-term slowdown of the AMOC does occur, sea level rise along the Florida east coast could conceivably be as much as 20 cm (8 inches) greater than the global value by 2100.

According to the most recent estimates by the IPCC (IPCC 2013, FigureB-1), the combined differential due to regional ocean heating and circulation change along the Southeast Florida coast would be in the range of 10%-20% greater than the globally averaged rise by 2090. For a median (50% probability) sea level rise of one meter by 2100, this would give about 10-20 cm (4-8 inches) of additional rise along the Southeast Florida coast, which is within the range of estimates by Yin et al. (2009). However, the IPCC models do not have the horizontal resolution required to effectively estimate these changes at the scale of the Florida Current and more research with higher resolution ocean models will be required. As such, it is prudent to add ~15% to the global mean sea level rise values projected by the IPCC in order to use them for Southeast Florida planning. This adjustment is accounted for in the regional sea level rise coefficients incorporated in the projections adapted for the region.

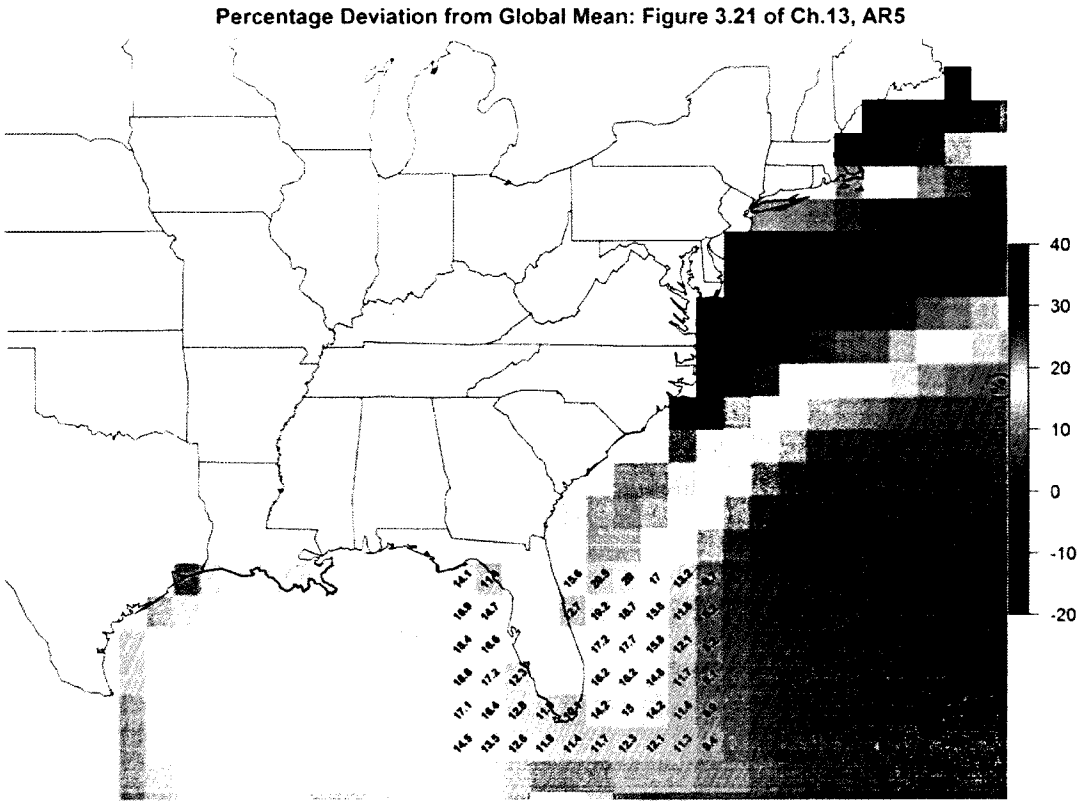

Figure B-1. Percentage of the deviation of the ensemble mean regional relative sea level change between 1986-2005 and 2081-2100 from the global mean value, based on Figure 13.21, IPCC (2013). The figure was computed for RCP4.5, but to first order is representative for all Representative Concentration Pathways (RCP). RCPs are the four greenhouse gas concentration trajectories adopted by the IPCC for its fifth Assessment Report (AR5).

APPENDIX C: WORKGROUP COMMENTARY AND RECOMMENDATIONS

The following are recommendations made by the Work Group for consideration by the Southeast Florida Regional Climate Compact Steering Committee to be used by the Compact Counties as part of the implementation of the Regional Climate Change Action Plan.

a. The unified SE FL sea level rise projection will need to be reviewed as the scientific understanding of ice melt dynamics improves. The projection should be revised within five years of final approval of this document by the Southeast Regional Climate Change Compact Steering Committee. This timing is consistent with the release of Intergovernmental Panel on Climate Change Sixth Assessment Report which will provide a synthesis of the major findings in climate science to date.

b. Users of the projection should be aware that at any point of time, sea level rise is a continuing trend and not an endpoint.

c. The planet is currently on a high emissions trajectory for which committed sea level rise is probably near the high end of the ranges. It should also be noted that the attenuation of impacts through mitigation will not likely be sufficient to overcome the inertia of the climate system prior to 2060.

d. Full and complete transparency of the projection and its implications should be promoted across the communities in order to encourage and guide effective and realistic planning, obtain realistic economic realities for maintaining functional infrastructure, insuring social and economically sound further development, and necessary adaptation.

e. Further work to develop projections for the occurrence of extreme events in tandem with sea level rise may be necessary to assist communities in planning for storm drainage adaptation.

APPENDIX D: ACKNOWLEDGEMENT OF PARTICIPANTS

The Southeast Florida Regional Climate Change Compact Counties (Monroe, Miami-Dade, Broward and Palm Beach Counties) and their partners wish to acknowledge the Work Group participants and members of the SE FL Regional Climate Change Compact Steering Committee for participating in meetings to support the development of the Unified Sea Level Rise Projection and the guidance document. The following members contributed to the development and refinement of the projection:

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Obeysekera, Jayantha, Ph.D., P.E.

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Steelman, Marcia, C.F.M

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Wanless, Hal, Ph.D.

Wdowinski, Shimon, Ph.D.

APPENDIX E: DEVIATION FROM 2011 PROJECTION

The updated unified sea level rise projection includes the range projected by the 2011 unified sea level rise projection with three enhancements. As described in previous paragraphs, the yearthe projection begins was shifted from 2010 to 1992. Since the projection now references the sea level rise that has occurred since 1992 instead of 2010, the values in the projection are larger as a result of the sea having 8 more years to rise. For example, at the lower boundary of the projection, by 2030, sea level rise is projected to be 5 inches above the where mean sea level was in 1992. This is the exact same projected elevation as 3 inches above where the mean sea level was in 2010, just a different elevation datum. Table 1 shows the adjustment of values from the 2011 Unified Projection with a reference (starting) year of 1992. Please note the lower boundary is the same in both the 2011 and 2015 projections. The second enhancement to the projection was the extension of the projection past 2060 continuing to 2100. The third enhancement to the projection was the addition of the NOAA High Curve as the upper boundary after Year 2060. For critical infrastructure projects with design lives in excess of 50 years, use of the upper curve is recommended with planning values of up to 34 inches in 2060 and up to 81 inches in 2100.

Table 2: Comparison of Unified Projection in 2011 and 2015 at Key West

Year	2011 Unified Projection (referenced to Year 2010) (inches above msl)		2011 Unified Projection (adjusted to reference Year 1992) (inches above msl)		2015 Proposed Unified Projection (referenced to Year 1992) (inches above msl)			
	NRC Curve I (1987)	NRC Curve III (1987)	NRC Curve I (1987)	NRC Curve III (1987)	NOAA Int.- Low	IPCC AR5 Median	USACE High	NOAA High
1992			0	0	0	0	0	-
2030	3	7	**5**	**10**	**5**	6	**10**	-
2035					6	7	12	-
2060	9	24	**11**	**26**	**11**	14	**26**	34
2075					15	20	38	49
2100					22	31	61	81

RESOLUTION TO BE SUBMITTED

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City Resiliency Program

- The City of Miami Beach has adopted a Resiliency Program
- Various projects are active under the Resiliency Program
- LRT/Modern Streetcar P3 Program will fall within the Resiliency Program parameters
- Concessionaire may be responsible for upgrading streets to meet the Program requirements, funded separately by the City

Resiliency Program

- Public roadway segments include raising elevation of roadway to minimum height of 3.7 NAVD at edge of right-of-way with minimum elevation of top of catch basins at or above 3.0 NAVD while maintaining a standard pavement cross-slope of 2.00%

- Underground utilities (water main, sanitary sewer, and storm sewer) within vicinity of route will be relocated, upgraded and/or protected as part of this project